Containing the Ship of State: Managing Mobility in an Age of Logistics

A Dissertation
SUBMITTED TO THE FACULTY OF
UNIVERSITY OF MINNESOTA
BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

Raymond Duvall

June 2018

Acknowledgements

It took me a long time to write this dissertation. I am a different person for all the lessons I learned along the way, and the debts I owe are deep. To the officers and crew of the *Ever Cthulhu* I owe the greatest debt of gratitude. To the Filipino crew with whom I laughed and cried, whose stories and analyses were the foundation of this dissertation, and who changed my life: thank you so much; maraming salamat po. It was a joy to learn from you, and I wish I could name you individually. Thank you to the Captain and the officers of the ship for welcoming me without reservation, giving me the freedom to conduct my research, and sitting down to hours of interviews and conversations. So much of what I learned did not make it to the page, but have changed me irrevocably. I am honored to have learned from you all.

In Los Angeles, Oakland, Tacoma, Singapore, Yan Tian, Kao Hsiung, and Hongkong, thank you to the ILWU members, truck drivers, stevedores and longshoremen I was honored to meet. Peter Olney was one of the first people I interviewed, and his wisdom and experience set me right and have guided this project along the way. Thank you to the consultants and experts I interviewed for indispensable insights into the shipping industry: Nils Madsen, Bill Hatch, Lynn Kan, Kenny Lo, and the many others who could not be named under IRB stipulations. I am also grateful to Robin Doyno, David Arian, Gary and Juliet Bustas, Sharon Cotrell, Kate Healey, Gifford Hartman, Michael Wilson, and all my comrades at the IWW LA Branch, Block the Boat-LA and Empire Logistics for being indispensable sources of knowledge and information. Thank you especially to Garrick Ruiz and Chris Wohlers who built my community in LA and taught me so much about logistics organizing.

Brooke Adams provided essential copywriting support in the final legs of this journey. I am so thankful for her exacting eye and essential help in bringing me across the finish line.

At the University of Minnesota, I cannot adequately express my gratitude for my advisor Bud Duvall, who has seen this project through many iterations and struggles. His patient and brilliant feedback and encouragement throughout the process helped bring

these ideas into being. In addition to keeping me on task with kindness and yet gentle urgency (when it was urgently needed), he pushed me to be a more careful and nuanced reader and thinker over the years, and read numerous drafts of every chapter with an exacting and razor-sharp eye. For almost a decade, his teaching has contributed to much of my development as a thinker. I learned to think structurally, politically, and at the level of the international because of him. The dissertation is much better because of his guidance. Without the generous and caring support he provided while I was in the field and at sea, his encouragement of my work, and his kindness to me throughout my years in graduate school, I would not be where I am now.

My committee members were all formative and indispensable forces in shaping the project. Joan Tronto believed in the project from the start. She asked the hardest, sharpest, most clarifying questions of the project throughout the research and writing process, and encouraged me till the end. David Blaney did not have to take on the role of being my mentor, but he did. He provided exacting feedback and incisive critique, and was always generously willing to brainstorm whenever I came knocking. Our conversations have deeply shaped my thinking. I am lucky to have been his colleague for a year at Macalester. Without Vinay Gidwani, I would not have come to this project. It was in Vinay's Asian Capitalism(s) class that the seeds of this project began, and although I did not ask him to read many drafts, our conversations have helped me right the course a number of times, and his teaching and commitment to postcolonial scholarship have been a lodestar. Finally, although Rob Nichols came onto my committee in the late stages, he has been a brilliant and generous interlocutor, teacher, and friend, and a model for the kind of scholar and organizer I aspire to be.

The warmest of thanks are also due to Nancy Luxon, Joe Soss, and Ron Krebs. Nancy and Ron provided indispensable advice while they were on my prospectus committee. I am grateful to Ron for thinking with me and for asking the most challenging questions, many of which I couldn't (and perhaps still cannot) answer. Nancy has generously given me hours of her time in office hours, seminars, and over email. She read many drafts, gave incredible feedback, advised me through my preliminary exams, prospectus, and job applications, and honed my thinking through extensive feedback on

numerous papers throughout graduate school. She has made me a better reader and writer through her seemingly endless generosity and brilliant mentorship. For her formidable mind and her unwavering dedication to graduate student mentorship, I am very thankful. Joe Soss provided friendship, whiskey, bagels, and a safe and joyful space in which to brainstorm and think through my ideas. I cannot thank him enough for the support he has provided Chase and I over the years. I always left a conversation with him feeling excited about my work, which I desperately needed in many low moments, and the work has become much better with his sharp insight. In the early days of graduate school, Antonio Vazquez-Arroyo, Yves Winter, Cesare Casarino, Ajay Skaria and Teri Caraway were also formative teachers, who taught me invaluable lessons about how to think (and live) politically and ethically.

The infrastructural support and general badassery of Jessie Eastman, Alexis Cuttance, Tia Phan, Kyle Edwards, and the other wonderful staff of the political science department cannot go without mentioning. Thank you for your labor, your solidarity, and for keeping the whole place running. You are the university.

Outside of the University of Minnesota, I have had the immense privilege since 2014 of being in conversation with a formidable and extraordinary group of critical logistics scholars: In particular, Deborah Cowen, Laleh Khalili and Martin Danyluk have shaped this dissertation perhaps more than anyone through their scholarship, conversation, and friendship. It has been one of the greatest joys of this dissertation to learn from and with them. They have showed me how to place my work in the context of ongoing political struggles, and their work and friendship have opened up worlds for me, both intellectually and materially. I am especially grateful to the feminist praxis demonstrated by Laleh and Deb in using their platforms as senior scholars to nurture, champion, and open up spaces for junior scholars such as I to share our work. Thanks as well to Jasper Bernes, Alden Wood, Beth Gutelius, Dean Snyder, Shiri Pasternak, Richard Nisa, Elise Thorburn, Tia Dafnos, Michelle Murphy, Julian Stenmanns, Kyle Loewen, Dara Orenstein, Wes Attewell, Jesse LeCavalier, Rafeef Ziadah and Maya Weeks. Thinking with you all has been a joy.

I am also grateful to the following scholars for their feedback, mentorship, and

insights on previous drafts of my work: Naeem Inayatullah, Sankaran Krishna, Charlotte Epstein, Laurel Mei-Singh, Özlem Altan, Wendy Wright, Isaac Kamola, Meera Sabaratnam, Jairus Victor Grove, and my fellow contributors to The Disorder of Things, especially Paul Kirby, who helped publish my dispatches from the *Ever Cthulhu* while I was at sea. Helen Kinsella and Janice Bially Mattern have been particularly wonderful mentors and readers, offering not only brilliant feedback and advice on my writing, but also essential lessons on how to move through the world of academia with a powerful sense of commitment to one's ethics and politics intact. My colleagues at Macalester College and Oberlin College encouraged and cheered me on in the past two years as I struggled to balance dissertation writing with full time teaching. Thanks in particular to Lesley Lavery, Thea Sircar, Lisa Mueller, Patrick Schmidt, Corie Hammers, John Kim, Alicia Johnson, Marc Blecher, Chris Howell, Harry Hirsch, Sarah El-Kazaz, David Forrest, Jenny Garcia, Corinne Teed, Abbey Chung, Rishad Chowdhury, Sandy Placido, Cal Biruk, Lisa Bhungalia, KJ Cerankowski, Samuel Taggart, and Daniel Schultz.

Thanks to the following institutions for the opportunity to present stages of this dissertation at various colloquia: Princeton University, the University of Toronto, Macalester College, SOAS, Goldsmiths, the Marxist Education Project, Empire Logistics, and the Sonic Acts Academy.

I have been endlessly enriched by the friendships and intellectual comradeship of my graduate school colleagues. Beyond their fiery intelligence and the countless lessons I've learned in conversation with them, it is the warmth of their friendships that have kept me going in a graduate school environment where low self-esteem and anxiety seem par for the course. For supporting this dissertation through conversation, exchange, and careful feedback, thank you to my amazing friends Mark Hoffman, Tracey Blasenheim, Britt Van Paepeghem, Chris Stone, Robert Asaadi, Ismail Yaylaci, Sema Binay, Garnet Kindervater, Haeri Kim, Adam Dahl, Zein Murib, Sergio Valverde, Samarjit Ghosh, Quynh Pham, Aaron Rosenthal, Florencia Montal, Maria Jose Mendez, Brooke Coe, Matt Hindman, Elena Gambino, Emily Mitamura, Jayan Nair, Elif Kalaycioglu, Shai Gortler, Phil Chen, Alex Moore, Lucas Franco, and Henry Thompson.

And then there are those who, in addition to thinking with me generously and expansively, have also provided life-affirming, joyful friendship and community, organized with me in meetings and stood with me on highways and streets, and have made other worlds and futures seem so possible in their fight for liberation. For making this dissertation better both in the writing process and its final product, thank you Andrew Dilts, Sina Kramer, Shiri Pasternak, Jakeet Singh, Cecilia Aldarondo, Miranda Trimmier, Randall Cohn, Gudrun Lock, Qais Munzhim, Spencer Cox, Chase Hobbs-Morgan, Eli Meyerhoff, Alex Steele, Bruce Braun, Kai Bosworth, David Hugill, and Stacy Douglas. For teaching me how to be a better organizer, listener, and political being, thank you Nazir Khan, Isuru Herath, David Boehnke, Kat Eng, Filiberto Nolasco Gomez, Alexandra Vagac, Thane Maxwell, Seth York, David Morawski, Michael Belt, Rosemary Fister, Anders Nielsen, Azul Kmeicik, and Mags Beall. Chris Rossdale, Aggie Hirst, Nivi Manchanda, Meera Sabaratnam and Kerem Nisancioglu became my comrades on the other side of the Atlantic, and have contributed to my thinking more than they know. My housemates Vince Collura, Olivia Lavecchia, Mandy Devens, and Geordie Flantz watched me cry, let me practice my job talks, and made everyday life an utter joy amidst some stressful years. I am lucky to have shared a home with them.

Sara Nelson, Laura Cesafsky, Kara Wentworth, Morgan Adamson, David Temin, Bryan Nakayama and Jessi Lehman held me accountable, wrote with me, exchanged ideas for hours, and read countless drafts of my work with the care and incisiveness any scholar longs for. Without our conversations and workshops about our dissertations, I would never have finished. Without their comradeship, care, and friendship, I don't know how I would have survived graduate school.

My father gave me the intellectual curiosity with which I have moved through life, and the adventurous spirit to live it with. My brothers, Clarence and Clement, have been the best friends in the world, and I am so happy to be able to call their family - Midnight, Candice, and Jieying - mine. When I got into Vassar College in 2004 with no means to pay for an expensive education abroad, my mother walked up and down the richest neighborhoods in Singapore with me, distributing letters to strangers in the hopes someone would randomly decide to fund my college education. No one bit, of course.

But when I later got enough financial aid to make it possible, my mother jumped up and down in her bedroom with me, rejoicing even though she was sad to let me go. 14 years later, I remain endlessly indebted to a mother who continues to sacrifice so much of her own happiness and comfort to provide for her family. I also remain hopeful that amidst deficits and cuts at liberal arts colleges around the nation, the life-changing education that places like Vassar gave me will remain available to the students who most need it.

Finally, what would I do without Chase Hobbs-Morgan? It is my greatest delight and fortune to move through this life with the kindest, gentlest, most thoughtful, giving and just person I know. I cannot possibly describe in words how happy I am to have a life with him, how deeply I cherish our partnership, and how lucky I am to have a partner who is so endlessly generous with both his heart and mind. With Chase, and fighting beside Chase, I know another world is possible.

This dissertation is dedicated to my mother, who gave so much for me to move across the ocean.

Abstract

This dissertation argues that global logistical circulation, although often taken for granted as a banal economic process, is a political project central to the making of world order. To make this argument, it examines the social and political economic impacts of the concomitant rise of logistical management and shipping containerization as twin operations intensifying the global circulation of commercial capital.

Since the 1960s, businesses have increasingly experimented with just-in-time logistical techniques to speed the realization of surplus value, leading to the rise of global transoceanic networks of distribution that reorganize commercial circulation across distinct yet densely interconnected political geographies. As logistical management systems have sought to regularize, standardize, and create flexible networks for circulating goods across vast distances around the world, they have become crucial to the expanded reproduction of capital. Accordingly, states have also adopted logistics-oriented growth strategies, investing in organizing and securing a socio-spatial order that produces a world safe for the movement of commercial capital, often in ways that inhibit the social and spatial mobility of vulnerable populations that live and work along global supply chains.

The empirical focus of the dissertation is a multi-sited ethnographic study of the Trans-Pacific shipping passage between the US and China. Understanding logistics as both a material practice and calculative rationality, this dissertation employs an ethnographic approach to interrogate the effects of logistics' global rise through four cuts: 1) A theoretical and historical analysis of the rise of logistics management and shipping containerization in the 1960s, 2) the securitization of goods movement in US maritime cargo policy, 3) the expansion of logistical infrastructure across the world's oceans and in Los Angeles and Singapore, and 4) the seafaring labor process.

My overarching claim is that logistical practices and rationalities exacerbate growing and often contradictory tensions between the mobility of capital and the containment of people and infrastructure that facilitate global circulation. Rather than understand containment as a static process of sequestration or enclosure that impedes the ability for capital and people to circulate, processes of containment have gained fundamentally productive functions that intensify and facilitate, rather than prevent or deter the long-distance expansion of capitalist networks. In this way, logistics produces a set of relations in which moving the world's goods across space comes to be understood as normative and desirable, while containing the human lives that do this work is seen as necessary and productive.

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I. Introduction

On August 31, 2016, at sea and out of sight, the shipping industry experienced what industry journalists called an unprecedented global crisis. Under the weight of a $5.4 billion debt, South Korea's largest shipping company – and seventh largest in the world – Hanjin Shipping, filed for bankruptcy and stopped accepting new cargo. This was the largest bankruptcy in the history of the container transport industry. With its assets frozen, Hanjin's container ships became stranded at sea, as ports refused to allow ships to dock on the basis that docking fees and labor costs would not be paid. The bankruptcy left half a million shipping containers, over 2500 sailors, and 85 ships floating in the waters off the coast of 43 ports, delaying the delivery of $14.5 billion worth of goods (Lee and Lee 2016; Powers and Nam 2016).

As days and weeks went by without a financial resolution, sailors remained marooned on their ships, as Hanjin was unable to pay for their flights home. Captains' requests that sailors be allowed to disembark were granted in some countries, but rejected in others including the United States and Canada. One International Transport Workers' Federation (ITF) inspector reported that a Customs and Border Patrol (CBP) agent had refused the sailors shore leave in Southern California on the basis that the sailors were "a possible threat" if they tried to "jump ship due to the Hanjin situation" (Karp 2016). In British Columbia waters, sailors on the Hanjin Scarlet were stranded for three and a half months. Food, water, and fuel supplies were running low on ships across the world, forcing captains to ration water, air-conditioning, and heat to save energy. International solidarity actions from the ITF and International Longshore and Warehousing Union

(ILWU) put pressure on some ports, which eventually allowed some sailors to disembark (ITF 2016; Meuse 2016).

Yet, the focus of coverage in industry magazines and business news was not on the fact that sailors were confined on ships for months, but on concerns over the financial consequences of the bankruptcy's disruption to the supply chain. Newspapers worried that IPhone 7 and Samsung Electronics deliveries would be delayed, that the bankruptcy was an indication of an industry-wide crisis, and that the disruption portended a weakening global economy. When a human-interest angle on Hanjin coverage was taken up, in fact, it was because a British artist Rebecca Moss had gotten stuck on a Hanjin vessel while on an artist residency. The confinement and denial of basic human rights to the largely Filipino and South Korean sailing population, on the other hand, were largely unremarkable (Nam 2016; The Economist 2016; Ryan 2016).

The Hanjin story distills a key set of issues that are at the heart of this dissertation's concern with the politics of global shipping logistics, and how it structures the larger social relations between global economic circulation and the various forms of spatial, political, and human containment that are entailed in ensuring smooth commercial flow. The containment of Hanjin's sailors crystallizes the political implications at stake in this dissertation. If it has become commonplace, if not clichéd, to suggest that the world has become increasingly defined by its "connectedness," often hidden from view are the social relations of production and circulation that structure global connections through a complex spatial network of transportation, warehousing, and distribution centers. The maritime transportation world is interesting in this respect because it is a world of gargantuan infrastructural spaces and automation, and its defining

characteristic is to be subject to the geographic and temporal imperatives of capital accumulation. But the maritime world is also, as Allan Sekula put it, one of "persistent work, of isolated, anonymous, hidden work, of great loneliness, displacement and separation from the domestic sphere" (2002: 582)."

Although the Hanjin bankruptcy brought the contained, isolated conditions of seafaring labor to international light, the lack of media attention to the contravention of seafarers' basic rights underscores the invisibility of their labor. If seafarers' experience of entrapment surfaced in news coverage at all, it was cast as an exceptional event, rather than a structuring condition of transportation labor. Indeed, as we shall see over the course of this dissertation, the same logistical infrastructures that enable manufacturers and retailers to achieve just-in-time delivery flows also reproduce geographical hierarchy and the global division of labor in ways that necessitate the containment of workers and ordinary people in ways that prioritize economic circulation over human well-being.

The ties that bind the production and circulation of goods and services across local and global space are tightening in new and important ways. When a system of the global shipping industry fundamentally restructured in the 1960s with the implementation of a global system of shipping containerization, shipping and logistics became an important basis for competition and a site of experimentation for profit maximization, rather than an afterthought of business management. The rise of shipping containerization and logistical technologies brought together a calculative logic of supply chain efficiency and a spatial and material practice aimed at optimizing the physical networks of production and distribution.

As the media coverage of Hanjin's bankruptcy suggests, the prioritization of just-in-time distribution elevates attention to the economic impacts of consumer delivery over the social impacts of workers' welfare. In fact, the growing dominance of logistical thinking has led to regimes of management and state authority that work to actualize logistical fantasies of seamless circulation. As mega-companies such as Apple, Amazon, Foxconn, and Walmart are all employing logistical strategies in their business models, we are witnessing an increasing effort in the industrialized North to facilitate the just-in-time distribution networks that aid the cycles of production and consumption crucial to a national economy's wellbeing. In turn, states invest and intervene heavily in the spatial order, not only securing channels of trade, but also reorganizing national economies into transnational systems that, as Deborah Cowen describes, "stretch the factory across national borders and even around the world" (2014, 103). Amidst this focus on the circulatory capacities of the state, the spatial disposition of bodies, information, and infrastructures within the state have become organized in ways that promote the construction and operation of global supply networks. This prioritization of goods flows over human mobility contributes to the material conditions through which the security and well-being of human and nonhuman lives are rendered subordinate to the imperative of smooth, efficient circulation. The rise of logistics thus ultimately produces a structural relation in which making the world safe for the flow of goods comes to be understood as normative and desirable, while restricting the mobility of vulnerable populations situated along these supply chains is seen as necessary and productive.

II. Against Flows, Containerizing Circulation

This dissertation's concern with the politics of logistical circulation arose out of a dissatisfaction with the largely abstract and symbolic way in which the language of circulation and flow has been invoked in popular discourse as well as the social sciences. Cash flows, data flows, flow charts, and self-help books about finding flow in everyday life all employ liquid metaphors to denote smooth movement and constant mobility as desirable material conditions, if not psychological states of mind. The flow has become one of the chief metaphors for the circulation of goods, services, people and ideas in the twenty-first century world economy. As Castells, one of the foremost theorists of flows argues, "flows are not just one element of the social organization: they are the expression of processes dominating our economic, political, and symbolic life" (Castells 2010, 442). Taken up by a remarkable number of social theorists such as Manuel Castells (2000), Manuel De Landa (1991), Paul Virilio (2006), Zygmunt Bauman (2000), Michael Hardt and Antonio Negri (2000), John Urry (2000), Steven Shaviro (2003), Christian Fuchs (2011) and many others, the popularization of flow metaphoes reflects a taken-for-granted assumption that the intensification and expansion of processes of circulation and globalization are largely normal, productive, and necessary, rather than conflictual, political, and contradictory.

Rather than avow the disruptive processes, forms of labor, and violent expropriations that underpin global economic processes, the flow metaphor aligns complex social formations with a fantasy of planetary connections that are fluid, hybrid, and occur with ease. They also contribute to an understanding of globalization in broadly despatialized and dematerialized terms, more as an emerging global consciousness (Lechte 2003; McLuhan 1962; Mann 2001), a legitimating ideology (Barrett 1991), or a

"discursive regime" for ordering "stretched social relations" (Schirato and Webb 2003, 200), than as a material reality that spatially organizes transformations in the global capitalist economy with profound social consequences. In such approaches to globalization, scholars turn global circulations and flows into abstract metaphors that theoretically substantiate the empirical observation of increased speed and mobility through a series of broad, but largely and problematically ahistorical ontological propositions. In doing so, they reify an image of circulation as an ahistorical and immaterial sphere of movement and accelerated temporality that does not adequately reflect the material nature of production and distribution.

As I boarded a container ship in 2014 and took a slow trip across the Pacific Ocean to China, however, the image of the flow as an immaterial idea became increasingly untenable to me as an adequate metaphor for global circulation. Material flows - of goods and commodities, and the ships, trucks, and trains that transport them - are hardly things of "natural" motion. As logistical processes have shaped the geographies of production and consumption into complex, layered networks of commercial circulation, they have also revealed how the complexities of global economic circulation have long entailed struggle over who and what moves, and when and how. In order to highlight the forms of containment, deprivation, and colonialism that occur in new ways as a result of logistical management, this dissertation explores the breakages, concealments, and frictions that emerge in the gap between the imagination of logistics, and its implementation, when fantasies of flow are brought into contact with their concrete materialities and social relations. I counter scholarly and popular tendencies to romanticize global flows as modes of representation for motion and change because,

flows, once understood in terms of their physical embodiment in the ships, containers, and networks that move commercial capital across the global supply chain, reveal themselves to be as much sites of state and corporate violence and containment, as they enable economic growth and opportunity.

Our world is hinged together not only by high-speed information or data highways, but also by densely material networks of transit infrastructure, and the flow of goods that moves between them: from skyscraper-sized ships to mega-ports, the 'in-between' spaces of the maritime supply chain transport over 95% of the world's trade, but are rarely understood as consequential to global politics. As a material process of transit and movement, however, the flow of global supply chains is not simply an innocuous economic process but a political project central to the making of world order. Global supply chain flows are shot through with disruptions both political and accidental. They are sites of constant antagonism between fantasies of command and control, and grounded realities of injury, immiseration, and collective struggle. As I argue in this dissertation, studies of the global economy miss crucial aspects of economic, political, and social transformation when they occlude an analysis of the relationship between capital flows and their dense, conflictual materialities.

What is particular about global supply chains is that they are simultaneously grand logistical architectures of complex spatial and temporal coordination, at the same time as they depend on dense, rooted transit infrastructures to move their goods. Supply chains never simply *pass through* - or flow - through local sites. They remain there in the concrete blocks of warehouses, the steel of train tracks and rail yards, and the piles of containers waiting to be moved somewhere else. The vast tracts of land required to place

these lines of movement are thus also sites of dispossession and containment for those who do not move through them but who stay rooted in relation to their flows, and whose bodies become subject to the force of just-in-time schedules and other demands for economic efficiency.

My analytical focus throughout the dissertation is not on transit infrastructures as disparate phenomena, but as nodes and networks coordinated through global supply chains. In industry literatures, the term supply chain broadly refers to the sequence of processes involved in the production and distribution of a commodity. As Anna Tsing (2009, 148) elaborates, however, the rising reliance of multinational corporations on supply chains have given rise to what she terms "supply chain capitalism" – a global arrangement of commodity chains "based on subcontracting, outsourcing, and allied arrangements in which the autonomy of component enterprises is legally established even as the enterprises are disciplined within the chain as a whole." As she argues, capitalists who control supply chains focus on rationalizing inventory rather than on disciplining and controlling labor and natural resources in disconnected sites of production. Capitalist formations that rely on supply-chain business models rely on two principle mechanisms: rather than imagining corporate expansion and control through the control of workers, as was the case in vertically integrated corporations before the twentieth century, business firms try to decentralize their reliance on workers through subcontracting and offshoring (Tsing 2013). Elite firms turn to supply chains to avoid managing labor and natural resources, seeking to cut costs by taking advantage of subcontracted relationships.

Second, and relatedly, as business models rely on contracting out, the geographical relocation of domestic production means that physical networks of

transportation become a crucial factor in generating corporate profit, since multinational corporations now rely on the lean and timely production and circulation of commodities across distinct yet densely interconnected political geographies. This means that a crucial change in the reorganization of supply chains is their geography. As suppliers have relocated to lower-cost areas offshore, the veins of transportation that move raw materials, intermediate and final products across global space have been reconfigured into dense and enormous "logistics clusters" that bring together transportation hubs, warehouses, distribution centers, ports, railyards, and logistical technologies into geographic concentration in particular 'chokepoints' of logistical activity (Chua 2017, Moody 2018, De Lara 2018). This means that while supply chain models have led to the geographical dispersal of production across oceans, they simultaneously rely on logistical agglomerations that bring together thousands of workers in major logistics clusters from Shen Zhen to Los Angeles. Supply chains are in this sense characterized by fragmented yet linked niches of production and circulation that rely on both the dispersal and subcontracting of workforces across global distance, and the concentration and consolidation of workers in dense zones. These elements make the supply chain a potential hub of complex social antagonisms and a vehicle of both intense harm and possibility.

I focus in particular on the deceptively banal shipping container and the ships that move it back and forth across the US-China supply chain. On the ocean, globalized flows meet the ground in the slow, tedious, and deeply fraught processes of moving commodities across global space. Ships have long played a central role in the making of international relations: It was the technological development of ocean-going ships and

navigational aids that set forth processes of colonization, and put in place the vast empires whose tentacles crept through trade routes across the world (Scammell 1989, Braudel 1981, Young 2001). But since its innovation in the 1960s,[1] the shipping container has been particularly responsible for increasing the rate and mass of commercial capital circulating the globe, and in doing so has provided infrastructural conduits for exacerbating uneven development through the rise of just-in-time logistics. Although it is widely taken to be self-evident that the goal for developing countries is increased competitiveness on world markets, and thus inclusion into networks of commodity distribution, my central argument in this dissertation is that global shipping networks not only distribute wealth or export-led growth; they also distribute inequality, containment, and "vulnerability to premature death" (Gilmore 2007, 28). As states insist that trade must continue at all cost, global shipping becomes a site of correspondence and conflict between international security practices, global trade mobility, and the lives of the workers and citizens enmeshed in these circuits.

Until recently, logistics has received scant attention as an economic phenomenon worthy of critical analysis.[2] Yet states, business corporations and the transnational capitalist class have increasingly framed their corporate and security strategies around

[1] I refer to the shipping container as an 'innovation' rather than 'invention' because it did not grow out of a technological development at all, but rather out of a shift in the perception of the ship's function. As the management guru Peter Drucker observed, the container grew "out of a new perception of a 'cargo vessel' as a material handling device rather than a 'ship' which meant that what really mattered was to make the time in port as short as possible (Drucker in Toscano and Kinkle 2015, 195).

[2] See, for the most sustained critical analysis of logistics, Cowen, Deborah. 2014. *The Deadly Life of Logistics*. Minneapolis: University of Minnesota Press. See also Chua, Charmaine, Danyluk, Martin, Cowen, Deborah, and Khalili, Laleh, eds. "Turbulent Circulation: Building a Critical Engagement with Logistics." Special Issue. *Environment and Planning D: Society and Space*, forthcoming July 2018. LeCavalier 2016, *The Rule of Logistics,* Minneapolis: University of Minnesota Press and Brett andro and Neilson, Brett. 2015. Special Issue "Extraction, Logistics, and Finance." *South Atlantic Quarterly 114: 1*

organizing commercial capital into integrated systems of commodity flow. In business definitions, logistics entails more than the physical distribution of goods from one point to another. Rather, logistics applies a concept - the strategic "management of physical flow" (Christopher 1995, 387) - to the material circulation of commercial goods, shifting from the management of discrete components to a rationality in which the entire circuit of the commodity chain is considered in the calculation of 'total distribution costs', from the storage and movement to the delivery of materials, parts, and finished inventory, beginning with sources of supply and ending at the point of consumption (Bowersox 1978). While the disparate functions of goods movement have long been individually recognized as central to all economic activity, it was not until fifty years ago that the concept of logistics as an integrative system took hold in the business imagination as a way to organize profit. This strategy of accumulation relies on translating the managerial logic of flow into the material practices of distribution. Envisioning the entire globe as a stretched and aggregated factory, logistics has come to profoundly shape the processes of production, circulation and consumption that link disparate sites together into a network of commodity chains.

Central to the project of logistics is a grand ambition to order world economic movement through the abstraction of different places, spaces, and publics, into flexible, adaptable, and manageable units that can be arranged according to their functional utility in aiding the circulation of world capital. Logistics is a managerial rationale and a physical practice - an assemblage of logics and practices - that assists the expanded reproduction of capital by providing an organizing framework for the global circulation of goods. In doing so, it does not simply seek to create a constantly fluid system of

mobility, but fashions material spaces and structures enabling circulation, exchange, extraction, and (unequal) accumulation for some, while enforcing isolation, immiseration, dispossession and arrest, upon others. Paying critical attention to both the historical formation of the business science of logistics and its concrete practices of goods circulation provides an important corrective to images of globalization that depict smooth circulation systems of information and exchange: While as a managerial science, logistics emphasizes the fluidity of the global economic system, logistics in practice organizes the circuit of commercial capital through uneven and conflictual political processes exercised across a stratified spatial division of labor (Massey 1986). As I argue, a critical analysis of the rise of logistics illustrates the messiness and violence of globalization in practice by evincing how the everyday exercise of geopolitical and economic power is exerted through states' and corporations' increasing economic dependence on the speed, mobility, and flexibility of commercial capital flows. As logistical management systems have sought to regularize, standardize, and create flexible networks for circulating goods across vast distances around the world, they have become crucial to the expanded reproduction of capital. Accordingly, we are witnessing the increasing consolidation of public-private partnerships that resurrect borders and sanction new forms of containment as they seek to facilitate global circulation.

III. Logistics as logic and practice

In this dissertation, I approach logistics both as a material practice and a calculative rationality that seeks to make the world safe for the movement of transnational commercial capital. I understand and use the term logistics in two senses.

First, as the empirical subject of study undertaken, logistics refers to the detailed domain and managerial art and science of coordinating complex movements of people, finance and things along the global supply chain in the interests of physical distribution and economic efficiency. I understand logistics in this sense as both a material network - the concrete industry composed of warehouses, railroads, shipyards, other transport infrastructure, and the companies that oversee their coordination - and as a business science of programming and management that applies logistical methods of organization to concrete movements through computerized networks and large scale data visualizations of processing. Second, I also employ logistics as a lens and a heuristic. If we understand the function of logistics to be a process of transformation that seeks to lubricate, flatten, connect and smooth out the irregularities of capitalist operations across space and time, then a *logistical reading* of the world analyzes patterns of mobility and containment by interrogating the structures and agents that employ fantasies of command and control to promote and protect neoliberal ways of life that facilitate conditions for global circulation. Approached in this way, a logistical reading seeks to uncover how abstract political rationalities of flow impact the concrete and lived worlds that become subject to the demands of commercial movement.

The models and flow charts of logistical management would have one believe otherwise, but global commodity transportation looks nothing like a flow. Cargo ships break in half when they exceed a size that can withstand the ocean's shearing force. Containers tumble into the sea during storms.[3] Port expansions produce devastating

[3] As ships have grown larger in size, the likelihood of structural flaws grows higher as ships are less and less able to withstand the shearing force of waves during heavy storms. Ships splitting in half, sinking or

environmental effects when they require the perpetual dredging of seabeds and movement of sand. Seafarers scrub, paint, swab and maintain steel hulls in a constant attempt to hold rust at bay. Rail workers and longshoremen refuse to unload goods when their bargaining power is threatened. The reason for these disruptions are twofold. On the one hand, the turn to logistics as a strategy of accumulation has placed capital's hope for profits into the sphere of circulation, resulting in a systematic tendency to overproduction that leads to a crisis of overaccumulation, leading to growing antagonisms between capital and the logistics working class (Toscano 2014; Bernes 2011; Clover 2016). On the other hand, these disruptions also reveal the fragilities and unintended consequences of a circulatory system that aims to understand itself as unified and coherent (Cowen 2014). These disruptions do not simply illustrate the 'negative externalities' of logistics experienced when third parties suffer the "costs" of distribution. Rather, when we center an analysis of capital as value in motion, we see that even as logistics networks may desire smoothness and efficiency, they constantly experience what John Agnew calls a "tension between fixity and flow" when capital cycles through fixed forms that freeze the circuit of capital and block its movement (Agnew 2003, 59). The complete absence of friction is both unattainable and undesirable for capital because the terrain through which it must move is striated and uneven. For this reason, this dissertation aims to renew a sensitivity to instances of breakage, disconnection, and

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losing containers have been reported numerous times in the last few years. For example, a Spanish container ship split on the coast of France in 2017 (Krishnan 2014); the 316 meter long MOL Comfort split in two off the Mumbai coast in 2013 (MOL press release 2013); the Svendborg Maersk lost 500 containers when struck by high winds in 2014 (Lister 2014); and another Maersk ship lost 70 containers on the way to the port of Charleston this year (Wren 2018). Perhaps most famously in recent memory, in 2015, the container ship El Faro disappeared and was found to have sunk in the Atlantic Ocean with 33 people on board during Hurricane Joaquin (Graham 2015).

collapse that reveal the limits of systems premised on circulation, connection, and control. Paying attention to the frictions of productive and circulatory processes is crucial because as logistical systems seem to move capital across the globe with increasing freedom and immediacy, so too have these modes of circulation produced strategies of containment and restriction, surveillance and constraint.

If one pays attention to the political emergence of disruptions and blockages to flow, they illustrate a world of work in which flow and motion are never givens, but instead always problems to be solved, and products that must be produced and moved through processes replete with tension, frictions, and breakage. To fully grasp how ceaseless circulation and seamless flow are ultimately logistical fantasies of control requires plunging beneath the surface to the level at which matter and space are transformed and displaced to produce the products and conduits of trade, to the intersections of resources and embodied activity, and to the discrepancies between thought and practice, where movement is made in the daily work of logistics. Under the surface, production and circulation are far from frictionless. They are the products of the hard work of human labor. This is precisely why logistics so aspires to lay out the global space of circulation for its use. As a mode of production, logistical attempts to control the spatiality of work are a battle on capital's part to engineer flow out of recalcitrant labor.[4] Flow is thus at once an imperative for capital and also a source of division and difference.

To make things move, logistics requires a constant recalibration of what constitutes the most effective balance of mobility and containment across the globe.

[4] I am grateful to Dara Orenstein for developing this point with me over an email conversation. Dara Orenstein, e-mail message to author, July28, 2016.

These tensions are constantly being negotiated and adjusted so that vested interests may profit from blockages and containment in one location - such as in warehouses that hold stock during price fluctuations - while accumulating from flows and accelerated circulation in another. In this sense, the rise of logistics does not simply attempt to flatten the world into a frictionless space for speedy circulation, but also seeks to find the balance of forces that can optimize and exploit uneven spatialities of division and difference in the supply chain for the organization of profit.

IV. Theoretical interventions

Theoretically speaking, this dissertation examines the relation between circulation and containment in order to nudge scholarly research on global mobility toward a more materialist analysis of capitalist social relations. As logistical technologies have come to play an increasingly important role in facilitating the circulatory imperatives of capital, they have employed geo-economic logics that imagine logistics as a practice of "magic" (Lyster 2016) and "seamlessness" (Curcio 2014). Far from a space of seamlessness, however, logistics produces profound social and spatial underpinnings and consequences precisely through its attempts to smooth the movement of goods and people. In order to counter such tendencies, this dissertation employs a materialist analysis so as to show that logistics is far from an exercise in seamlessness, and in fact involves a struggle to suppress, incorporate, and silence the constant threat of disruption to capitalist circuits. Against the depoliticized depiction of logistics as a practical, banal business science, I employ such a materialist approach in order top critically interrogate the structures of

governance, exploitation, dispossession, and domination that underpin logistical logics and practices, and the effects of those processes on everyday life.

In the last decade, the announcement of a "new mobilities turn" has seen an explosion of scholarship in geography, anthropology, sociology and political science devoted to studying the politics of mobility (Barenholdt and Simonsen, 2004; Cresswell, 2006; Cresswell and Merriman, 2008; Sheller and Urry 2006; Urry, 2000; 2007; Uteng and Cresswell, 2008, Cresswell 2011; D'Andrea, Luigina, and Breda 2011). The mobilities turn does not claim that the study of mobility is anything new: movements of one kind or another have long been at the heart of all kinds of social science, ranging from studies of migration and globalization, to more recent interest in networks and transnational populations. What it does argue is that earlier accounts of movement, migration, and transport often take the acts of movement themselves as a given - as taken-for-granted facts of life from which theories of place, belonging, social interaction or power could be applied (Cresswell 2010). Scholars of mobility thus seek to center mobility not just as a "function of time and space, but an agent in their production" (Cresswell 2006, 6), in order to examine how the physical movement, practices, representations of mobility are implicated in the production and distribution of power (Sheller and Urry 2006). Accordingly, such scholars have sought to understand global circulation as a necessary condition for the promotion and protection of liberal ways of life (Lobo-Guerrero 2008; Brown 2010); as a technology of security governance (Aradau and Blanke 2010); a cultural phenomenon that actively constitutes the meaning of objects and identities (Lee and Lipuma 2002; Aronczyk and Craig 2012); and a meta-infrastructure for the control and management of populations (Luque-Ayala and Marvin

2015). These approaches seek to understand how mobility functions as a social form that enables new kinds of access, understanding, and engagement across long distances.

As a term deployed as counterpoint or corrective to territorial conceptions of governance and control, mobility has been quickly normalized in scholarly and everyday discourse as a desirable form of movement across borders and spaces of containment. If IR's traditional focus on territory has trapped the field in methodological nationalism, circulation has often been offered as the antidote: as a mode of representation for motion and change, it is a catch-all term for both abstract and material movements of money, data, information and capital across long distances. However, because its methodological predisposition is to study acts of movement rather than their absence, the body of scholarship tends to express the relationship between mobility and immobility as a dichotomous one, often advocating for the right to the former in the face of the enforcement and undesirability of the latter. Accordingly, when the specters of immobility, detention, or containment are raised, these conditions are almost always understood as competing logics of enclosure that operate as forces impeding the inherent "right to move" (see, for e.g. Mountz et al. 2012). Accounts of global mobility thus tend to juxtapose the freedom to move with the force of being stuck, casting them as two ends on a spectrum in order to make a set of normative propositions about the human right of passage.

My point is not, of course, to suggest that normative arguments about the right to move should not be made; quite the contrary. Rather, I argue that in focusing primarily on the social relations of movement or incarceration of specific groups, scholarship on mobility also misses profound systemic shifts in how global circulation is organized on

the whole. While circulation is employed rather loosely to refer to material, informational, and ideological flows and the resulting forms of government that emerge in response to intensified movement across borders and boundaries, it is often invoked as a common sense whose meaning is self-evident. Yet the polysemic contexts in which "circulation" is invoked frequently miss a crucial political economic analysis of how circulation functions as a specific sphere of capitalist exchange. Circulation is more than a loose metaphor for movement. It is also plays a crucial role in capital accumulation, denoting the sphere of economic activity in which the circuit of capital is completed as the value of commodities are realized through their sale on the market. As Joshua Clover (2016), Giovanni Arrighi (1994), and Robert Brenner (2006) have argued, the 1970s marked a period of economic turbulence in which the industrialized North, experiencing a long downturn in its capacity to generate profits from the productive sector, began centering experiments with profit making in the financial and logistical sectors. Although transportation and other logistics concerns were neglected for many years due to rapid economic growth in the United States after World War II, a range of factors, from oil price shocks in 1973 and 1979 to changing consumer tastes (Allen 1997, 108) prompted firms to experiment with reducing inventory and competing on the basis of transportation.

While this turn to an era of circulation has received significant attention with respect to the rise of financial derivatives and speculative capital (LiPuma and Lee 2004), far less scholarship has focused on the explosion of the logistics industry, and its effects on the circulation of commodity capital. As financialization was proceeding apace, experiments in new methods of combining production with circulation prompted a reorganization of

economic activity towards increasing profitability through supply chain efficiencies. Mezzadra and Neilson (2013, 68), for example, argue that logistics qualitatively restructures the way consumers shopp, offering retail capital new avenues of growth and accumulation by enabling them to sell delivery as much as the item delivered. Across the United States, transportation and logistics costs fell from about 16% of GDP in 1980 to less than 8% in 2009 (Larkin 2014, 3). Today, logistics is a rapidly growing sector in the US. Over four million workers are currently employed in the logistics sector, in jobs ranging from distribution warehouse pickers to railroad workers. E-commerce companies rely heavily on the logistical restructuring of the socio-spatial relations between consumers and retailers, leading to a growth rate of 27.1% for Amazon and 50.3% for Wayfair.com in 2016. In contrast, big box stores that rely on restructuring the relations between retailers and suppliers experienced stagnation if not decline, with Walmart's growth rate at -0.8% and Target's at 1.6% (Loewen 2018, 6).

As the logistics industry expands the reach and speed of commercial delivery, it has intensified the ability for capital to reproduce itself through accelerating circuits of consumption and production. In turn, states and corporations dependent on these flows increasingly organize governance in a way that favors the flows of capitals over the mobility of people, making human rights of passage secondary to the mobility of capital. To situate the problems of human mobility and containment in the context of the politics of capitalist circulation is to insist that the operations of capital structure the relations between fixity and flow, such that the ability to move is not just a matter of human rights or citizenship. Rather, the imperative for capital to expand through the global supply chain comes to shape and reconfigure who - or which things - get to move, creating

circulatory regimes of containment that configure the internment of particular things and people in relation to their role in the expanded reproduction of capital.

This argument has precedents in Foucault (2007), Polanyi (2001), Braudel (1982) and others, who have each demonstrated that the organization of the free circulation of goods and capital, and along with it the creation of domestic and global circulations of labor between urban and rural areas, and core and periphery, have required a large political apparatus to render certain circuits possible and others impossible (Salter 2013). Political acts of containment, detention, or immobility have long functioned as part of a systemically organized effort to regulate mobility in service of the circulation of capital. In this sense, containment not only functions to stop or impede the movement of particular human subjects while letting other subject move, as critical approaches to the study of borders often argue (e.g. Mountz et al. 2012; Lloyd 2012; Andreas 2009). Instead, I insist that it is crucial to understand how patterns of human mobility and immobility are shaped by changes in the organization of capital accumulation. The rise of logistics is consequential to human mobility because it converges processes of lean production, increases biometric surveillance, consolidates firms, and increases capital intensity in ways that have altered the shape of accumulation and, more importantly, the terrain of class conflict and human mobility. Through a reading of logistic's rise, this dissertation seeks to better grasp the relationship between human and capital mobility by illustrating how containment has become a productive force for the circulation of goods and capital.

As I demonstrate in chapter 1, these forces reach unprecedented levels of intensification under the demands of just-in-time logistics. Capitalist circulation functions

not only by excluding and detaining certain populations and restricting their movement in favor of others, but also by making containment a *productive* form of power that constitutes social subjects and creates systems of signification based on their relationship to the circulation of supply chains.[5] For this reason, this dissertation seeks to understand the norms, practices, and institutions of mobility through a theory of capital circulation, rather than to a dichotomous reading of mobility and immobility.

Turning from a politics of mobility to a politics of circulation allows us to clarify the relationship between capitalist social relations and population mobility. For Marx, circulation is at the heart of capitalist social relations because it is the process by which the social character of labor, embodied in the production of commodities, can only be realized in their sale on the market. Circulation is in this sense the total circuit of capital that brings the process of production to a closed loop through the distribution, realization, and consumption of commodities, allowing surplus to be reinvested in the production process and restarting the process of circulation over again. I expand on why a theory of circulation becomes key to the relationship between containment and mobility in chapter one.

For now, however, it is important to emphasize that when viewed in terms of a materialist analysis, circulation is far from the dematerialized, virtual process articulated in the language of global flows, but rather a fraught yet systematic logic of expansion that

[5] I am drawing here from Barnett and Duvall's definition of "productive power" as "the constitution of all social subjects with various social powers through systems of knowledge and discursive practices of broad and general social scope" Productive power here concerns the ways in which social processes and systems of knowledge come to *define* the "social fields of action that are imaginable and possible." While productive power works in close relation to more structural forms of power that produce and reproduce relations of domination or subordination, it is distinct in the way that it generates new understandings of social life. See Barnett and Duvall 2005.

is integral to the logic of capital. Contrary to theorists such as Paul Virilio, whose theory of dromology (1986) suggests that the logistical nature of the contemporary world means that mobility has *replaced* a world of fixities, the expansion of the logistics industry has required large-scale, static transit infrastructures that act as conduits for commercial capital flows. As David Harvey has stressed, even the seemingly frictionless world of global capital needs relative 'permanences' in order to reproduce itself (Harvey 1996). Flow requires fixed infrastructure, so that fixed infrastructure and strategic forms of containment become productive for these operations of capital.

V. Theorizing circulation through containment

There are two common ways that the notion of containment is deployed in international relations (IR) discourse, to which I wish to add a third. First, containment is perhaps most commonly used in IR scholarship to describe geopolitical strategies that seek to prevent the expansion of the sphere of influence of rogue or enemy states though both economic and military means. First employed as a Cold War doctrine to respond to Russia's expanding influence in eastern Europe, Vietnam, China and Korea, containment is typically envisioned as the application of economic and military "counter-force at a series of constantly shifting geographical and political points" that works to erode the power of a state deemed threatening (Kennan 1947, Gaddis 2005). Containment policies often seek to intervene either directly or indirectly to prevent a state from achieving either economic growth or political influence. This connotation of containment, as a geopolitical strategy and strategic exercise of American sovereign power, is largely outside the scope of my analysis, since such usage largely engages the inter-state

dynamics that differ from the analysis of state-capital relations that are at the center of concern for this dissertation. However, in a way, we can also read cold war containment strategies as an attempt to build an American polity whose foundation rests on "protecting capitalist social relations from the insidious flow of soviet influence".[6] In this way, even the inter-state dynamics that constitute bipolar world order bear important relation to the stakes of this argument, given that cold war containment is also a strategy aimed at containing particular forms of flow in favor of capitalist ones.

The second sense in which the term containment is deployed in IR is in studies of carceral environments such as the prison, detention center, or the refugee camp (e.g. Lloyd and Mountz, forthcoming 2018; Paik 2016; Pickering 2014; Bigo 2001; Doty 2007). In this usage, containment is a spatial strategy of enclosure and restriction that similarly captures or restricts free movement, but applied at the scale of bodies rather than states. In such work, containment is a repressive force that prevents or impedes free movement so as to limit the autonomy of subjects that the state either seeks to capture and control or exclude and cast out.

Strategies of containment are usually deployed here to refer to states' efforts to contain the international circulation of migrants, or to contain the domestic circulation of 'dangerous' subjects. Punitive or exclusionary policies of detention and restriction are applied to subjects deemed dangerous or deviant, and power is exerted in a more physical sense on the bodies of subjects through the literal walls, fences, and carceral technologies. As a reaction to increased levels of global circulation, containment in this

[6] This formulation is Raymond Duvall's. He suggested it as a reminder that cold war containment may not be as unrelated to logistical containment as I would think.

sense is deployed as a strategy of defensive development; a necessary regime to protect the community at home from those deemed not to belong (Lloyd 2012). Mark Duffield, for example, argues that containments are part of a security architecture that "interconnects regimes of internal and external development via the containment of circulation" (Duffield 2008, 155), determining who gets to move and who does not. Yet the term "containment *of* circulation" assumes a binary between the two terms. In these logics, containment and flow are "necessary opposites," where flows are part of "a pattern that unfolds as objects are continually *released* from containment" (Shyrock and Smail 2018, 4).

Although employed in different contexts and at different levels of analysis, both these usages of containment assume that containment is a process that restricts circulation (of states or bodies) rather than one that contributes to its active production. This brings me to a third sense of containment that I employ in this dissertation, which is to speak of containment as a productive force for mobility, rather than its impediment. I suggest it is helpful to think about *circulatory regimes of containment*, in which technologies of stoppage and capture are integral to the logic of a circulatory regime rather than its opposite. Interpreted in this way, Mark Salter's provocative phrase used to describe processes of global circulation as that which "make move and let stop" (Salter 2013) might be productively flipped to emphasize the centrality of containment to processes of movement – that is, flows should be considered in both their productive and repressive guises, in the multiple ways in which they let stop in order to make move.[7]

[7] Thanks to Raymond Duvall for this very helpful formulation.

Foucault provides us with a framework for this relationship. Even in his classic study of the penitentiary system in *Discipline and Punish* (1977), Foucault was intent on showing that the prison model was not only a formal site of capture, but circulated through the whole of society in a variety of guises. Even the most seemingly benign social projects - from social welfare, aid offices, and workers' compounds, to societies of patronage - bore marks of the penitentiary system, which did not take on a prison model as a whole, but "utilized some of its circular mechanisms" (Stoler 2016, 89) that adopted curative, punitive, and surveillance arrangements as central technologies of governance.

An analysis of circulation would later become central to Foucault's understanding of security. From the early 1970s, Foucault sought to scale-up his analysis of the microphysics of power through the introduction of the framework of circulation. Around the turn of the eighteenth century, a critical question was how to open up enclosed towns to commerce, people and resources, "resetting the town in a space of circulation" (ibid, 13) without simultaneously detracting from the power of the state. Foucault's interest in these questions was rooted in the physical conduits of transport infrastructure: he sought to understand how architecture and infrastructure, "bridges, roads, viaducts, railways" (Foucault 2000, 354) have strategically distributed people and things, allowing for the "canalization of their circulation" (361). Sovereign power was found to be qualitatively insufficient for responding to the challenges of circulation; its rigid juridical framework blocked what Foucault understood to be a necessary transition to a more versatile, continuous and discreet form of government (2003). This would prompt Foucault to theorize biopower at two levels: first as that which emerges in the microphysics of discipline through the regulation of normativity, and second, to the regularization of

bodies and a biopolitics of the population that relied on mechanisms of security (Foucault 1978).

This is where a crucial relationship between containment and circulation comes to the foreground: discipline functions through the organization of specific sites in the enclosures and artificial environments of the prisons, hospitals, schools, and factories that presented opportunities to archive, discipline and partition individuals' behavior through architectural interventions such as cellular space. However, Foucault argued that disciplinary institutions are not isolated but understood in terms of broader techniques of social control: they function to exercise power in the bourgeois interests of the capitalist economy; to pacify and organize workers for life in industrial society, rather than to rehabilitate or cure. Individual infrastructures of disciplinary containment thus served as essential nodes in a wider program of governing the circulation of capital. In this sense, while disciplinary power works to distinguish those who should be included from those who must be excluded, security apparatuses seek to mediate the relationship between containment and circulation, and have the "constant tendency to expand," where "new elements are constantly being integrated… allowing the development of ever-wider circuits" (Foucault 2007, 45).

In moving from discipline to control, states seek the management of circulation to control, monitor and protect the means of industrial production. In this context, security is applied to circulations of people and resources centripetally, in order to establish rhythms and enclose flows in fixed, controlled streams so as to "eliminate the effects of imprecise distributions" (Foucault 1977, 143), "[establish] calculated distributions" (219) and "[arrest] or [regulate] movement" (ibid). Containment, in other words, is a security

strategy whose formulation allows the state to carve out new ways to concentrate and discipline circulations in and out of territory, determining not *whether* to include, but *how* (Puar 2017, 21).

Following Foucault, this dissertation proposes that we think about containment as a disciplinary strategy for enforcing a circulatory regime for capital. Once we contextualize the movement of people within systematic efforts to organize the flow of goods, we see that these two objects of analysis are deeply intertwined. I turn to an explication of these dynamics through a Marxian analysis of the sphere of circulation in chapter one, seeking to illustrate that circulation should be understand as a crucial component of capital accumulation that constantly experiences a tension between fixity and flow. Since the continuous movement of total social capital is crucial to the health of the capitalist economy, capital is always searching for new ways to mobilize and move rather than fix itself in space. Ironically, however, the mobility of capital simultaneously depends on the spatial expansion of infrastructures of mobility like railways, ports, and roads, leading to the construction of transportation and communications infrastructures that require a certain degree of fixity in the built environment. There is, therefore, an immanent tension between fixity and motion: infrastructures of mobility are fixed forms that simultaneously aid the circuitry of capital as they remain in place.[8]

As the unencumbered circulation of global trade has become increasingly central to the maintenance of national economies, states have become increasingly occupied by

[8] I should clarify, however, that in Marx's definition, the 'circuitry of capital' does not always entail a physical change in the location of the commodity: when a house is sold on the market, for example, capital can circulate (its production realized in the sale) without the house actually moving. For my purposes, however, I primarily focus on physical changes in location.

the logistical problem of managing stocks and flows. Alongside an increasing emphasis on logistics in corporate management strategy, states too play an integral role in the movement of capital. They do so in ways both physical and legal, from the legal construction of special economic zones that suspend national law and labor regulation to facilitate foreign investment, to the physical construction of transportation infrastructure that provide the material system for the technological application of freight containerization. As I discuss in chapter two and three, these legal and physical infrastructure facilitate the flow of neoliberal capital and invest states in the work of regulating mobility and movement within its territory. As we shall see, the differentiations made between whose interests are aligned with efficient trade and whose are inimical to it are therefore profoundly political. As states come to function as political nodes in the global circulation of capital, they act as managers of circulatory containment, actively contributing to the uneven geographies of capitalism through the "iterative incorporation and expulsion of firms, workers, and spaces" into and from these global circuits (Bair, Berndt, Boeckler and Werner 2013).

In particular, my analysis is centered on the object of the shipping container and its role in the global circulation of logistics. Shipping containers are the distributional objects that containerize and standardize the packaging of goods in order to move them across vast distances. At face value, they seem utterly humdrum appendages to the larger machinery of logistical movement, yet they are widely noted to be crucial instruments in the emergence of capitalist globalization, as they increase the rate, mass, and spatial scope of trade through the standardization and homogenization of a diverse array of commodities. In the process, their radical opacity also conceals the social relations of

production contained in the making of global commercial capital. The container standardizes diverse goods and the social relations of production contained in their making, and hides them behind the steel walls of a modular box. In this act of obfuscation, containerization functions to conceal the historically and geographically specific social relations of capitalist society.

Containerization is a technological solution to the 'problem' of labor, creating automated intermodal systems that increasingly cut humans out of the process and forcing those who remain into flexible models of distribution work. It also enables a 'forgetting' of key links in the commodity chain by enabling offshore production, creating spatial distance between manufacturing sites and markets, concealing the port and the ocean as harbors are moved far from cities into urban peripheries, and consigning seafarers to move goods over the ocean within shorter turnover times. A good number of scholarly accounts exist that trace the history of the container and its rise as the hegemonic infrastructural form for commodity transportation today.[9] However, what I aim to do in this dissertation is to understand containerization not only as a historical object, nor even solely as a practice of movement, but as a material force that profoundly shapes the productive capacities of states and corporations, with significant consequences for contemporary life under logistics. As a force of abstraction that standardizes diverse social relations into a modular mode of transportation, containerization not only describes the physical infrastructure of global distribution but also the entire apparatus of supply chain movement by which states and corporations seek to contain the mobility of certain

[9] See Levinson 2006; Mutlu in Salter (ed.) 2016; Martin 2014; Roberts in Thrift, Tickell et al. (eds) 2014.

circulations while intensifying and accelerating others, building a global logistics architecture through circulatory regimes of containment.

The concept of the container is often used to convey various modes of classification and sequestration. But if we look at the container itself as a specific form, it is a form of containment that depends simultaneously on mobility. This is true not only in the sense of its physical form – that the container is box built to be transported — but on the logic of expansion inherent to its utility: for the container to become a useful infrastructure, it had to be premised on the global expansion of associated infrastructure across the world. In this way, as I explain, containerization specifies the technologies by which states control the contradictory flows of goods alongside the regulation of people. Containerization, as I argue, is a technology that moves away from a logic of *enforcement* – a logic of inclusion and exclusion – to a logic of *modulation* – a logic of the transactional mechanisms by and through which we modulate the relationship, between territory, governance, and trade flows.

VI. Circulation as ethnographic method

The empirical focus of the dissertation is a multi-sited ethnographic study of the Trans-Pacific shipping passage between the US and China. To my knowledge, this is among the first ethnographies of container shipping that exists in the literature of the social sciences.[10] To execute this project, I lived and worked on board a 119,000-ton

[10] There is only one other ethnography on a container ship that to my knowledge exists. This is Kale Fajardo's book, *Filipino Crosscurrents: Masculinity in an age of Globalization*. Unlike my ethnography, which undertakes a study of the labor process and mechanisms of control and division on board the container ship, however, Fajardo's account of containerization remains a relatively peripheral framework

container ship with 22 male seafarers for seven weeks, traveling from California across the Pacific Ocean to four ports in China: Yantian, Hongkong, Kaohsiung, and Taipei. Over the course of another seven months, I conducted interviews at key sites along the shipping supply chain between the United States and Asia Pacific. Five months of research were conducted in Los Angeles and Long Beach, the two biggest and busiest ports in the U.S., which are together responsible for 40% of all commodities entering and exiting the U.S. Here, I conducted interviews with port administrators and longshoremen from the International Longshore and Warehousing Union, and conducted participant-observation action-based research with a community collective named Block the Boat. I also conducted interviews in Singapore with logistics managers and executives in the shipping industry. Over the course of a year, I conducted fifty-four interviews.

Across these sites, I have sought to understand how logistics has rendered possible the growth and extension of transportation networks that articulate a fantasy of command and control through the infrastructure of containerization. From ports to ships, the infrastructures of global shipping are often far removed from urban populations, sequestered in securitized zones walled off by fences, accessible only by the depleting pool of workers who move the world's goods. When I started this project, I first thought about my role as an ethnographer in terms of making the hiddenness of these zones of circulation visible; to pull back the curtain from the operations of capital few get to see. I had precedents for this approach: Marx, after all, famously sought to unveil the social relations of production and the labor power embedded in the production of the

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for the central foci of inquiry, which is on the production of masculinity and sexuality in the midst of global connection.

commodity by going into the "hidden abode of production" of the factory to see "not only how capital produces, but how capital is itself produced (1977, 279-80). By shifting the focus of his study to the internal function of the factory, Marx sought to change the site of analysis from market-based exchange to wage-based production, revealing the labor process itself as the locus of the valorization of capital.

In moving from the factory to the ship, what I sought was a similar shift in our angle of vision. I was floored by the fact that ninety percent of world trade by value is transported across the ocean — that ninety percent of everything that we eat, wear, and consume, from the gas in our tanks to the clothes on our backs, travels across a space that International Relations scholars have largely neglected. By descending into the hidden abode of circulation, what I sought was to publicize the world of containerized circulation that logistics has rendered possible. In taking container shipping as my ethnographic 'site', I would seek if only partially, to bring to the fore the social relations that are usually shrouded by the final products, and further encased in circulation, in order to disclose the violence that usually lies behind the "anodyne surface of exchange" (Toscano and Kinkle 2015, 193).

Yet, as Kathi Weeks has pointed out, Marx's effort to descend from the market to the factory sought "not only to publicize but also to politicize the world of work" (Weeks 2011, 7). Marx did not only aim to *expose* the social role of labor, but also to "pose it as a political problem" (ibid). In this sense, Marx's critique of political economy seeks to make work both public and political, in doing so "[countering' the forces that would naturalize, privatize, individualize, ontologize, and also thereby, depoliticize it" (ibid). It is thus not enough to publicize the hidden world of shipping, as if once its operations are

shown to the world, they will self-evidently reveal how complex and politically vexed smooth depictions of globalization actually are. One also has to politicize them, revealing how that which appears normal and necessary is actually constituted by a vast array of social conventions, disciplinary apparatuses, political forces, and divisions — 'extra-economic' forces that make economic practices work.

It is one thing to do such work in a single field site, where a bounded place such as a small community, cultural group or geographical entity is the central object of analysis. The field in this sense has been understood as a container of a particular set of social relations, which can be "studied and possibly compared with the contents of other containers elsewhere" (Falzon 2009, 2). The logistics industry however, spans a vast capillary network of sites and actors. Its operations exceed the boundaries of nation states, groups, and spaces as companies seek to move goods along fixed infrastructural points, as flexibly as possible. How does one ethnographically study global flows if, as social and political phenomena that are rooted in material movement, flows are by definition constantly in transit? How then does one conduct an ethnography of a network so vast, let alone to publicize and politicize its operations? And what does being rooted to a "field" site mean when that site is a ship on the ocean?

As I moved through the logistics network in these zones of circulation, it became clear to me that ethnography puts pressure on the possibility that we have asked the wrong question. What if, rather than thinking an ethnography of transpacific shipping might magically reveal the previously-hidden operations of logistical life, I asked whether the hiddenness of logistics networks is precisely the point? In between mending leaking pipes of heavy fuel oil on stormy days at sea and watching gantry cranes unload a

thousand containers per day at port, what became clear was that capital's operational networks are securitized, concealed and contained in modular boxes and ships because it is precisely the invisibility of the network that facilitates its successful functioning. As logistical management systems have increasingly equipped a wide array of organizations and states to control and plan the operations of delivery and exchange at more precise time scales, they have also led to an "increase in the geographical range of locally consequential social interactions" (Tilly 1995 in Silver 2003, 25). The material connections and managerial databases of logistics generate great possibilities for capital to declare power over previously disparate sites.

In this way, popular and scholarly imaginations of a world composed by smooth globalized flows not only create a powerful discursive fiction, but also materially disguise the uneven striations and containments on which logistics capitalism depends. Workers and infrastructural networks that are fixed in different states and regions are on the one hand, linked in uneven and often conflicting ways to each other by the world-scale division of labor. On the other hand, the rise of logistics has connected these once-disparate networks through the consolidation of various components of the supply chain into a single managerial framework, providing fertile new possibilities for understanding the connections and potential solidarities of labor across a vast global network. On average, each supply chain involved in the production and distribution of a final commodity has seen a reduction in the number of suppliers from which retailers procure materials, components and services. As Kim Moody (2017, 65) points out, for example, consolidation in the US automobile industry "has been spectacular," with the number of

firms supplying components to US and foreign major assemblers going from an average of 1000 to 300-600 in the last twenty years.

One outcome of this consolidation of suppliers is that although goods travel more frequently and over longer distances, they are also owned by a fewer number of firms. This not only makes the possibility of organizing them simpler for firms themselves; an unintended consequence is that any direct action or disruption against a single node in the supply chain has the potential to be more effective in terms of the scale of economic cost to target corporations. A possible emergent functionality is thus that capital is incentivized to sever and contain these potential connections by making their social relations less visible. Indeed, the notion that capital seeks to alienate workers from not only their work but also each other is fundamental to Marx's concept of alienation. In both *The German Ideology* and *Capital,* Marx argues that the objective fact of alienation (the alienation of the worker from control of the means of production) produces ideological phenomena in which workers experience their activity as passivity, their power as impotence, and their personal lives as individual rather than socialized. This is what prompted Erich Fromm (1955, 124) to characterize alienation as a condition in which "man does not experience himself as the active bearer of his own powers and richness but as an impoverished 'thing' dependent on powers outside of himself, onto whom he has projected his living substance." One of the aims of this dissertation is to show how these forms of alienation – as a historical outcome of the capitalist production process – is stretched and intensified under logistics. As firms consolidate control of increasingly spatially fragmented supply chains, an emergent consequence is that they hide and atomize the global supply chain into disparate parts such that ports, ships,

workers, logistics managers, and railroads appear as disparate rather than integrally connected entities. Through the regulation and flexibilization of labor, the mobilization of state violence against protests, the intensification of work, and the containment of workers in spaces and zones distant from each other, the global effect of logistics' rise is that neoliberal states and corporations incentivize the atomization of working solidarities, concealing the collective labor power that is at the heart of what makes logistics tick.

Given the material connection of previously disparate supply chains across global scale, it is thus insufficient to separate the study of logistics into a study of specific locations and fields as discrete phenomena. To do so would be to contribute to the containerization of social relations on which capital depends. As such, I employ a relational ethnographic method in an effort to interrogate these forms of compartmentalization, seeking to understand how invisibility is integral to logistics' success as a strategy for global capital. In pursuit of such an effort, I focus not on specific places and things, boundaries and discrete field sites, but zones of relations; not organizations or entities, but the processes that configure the relations among different actors or institutions within a given social formation (Desmond 2014, Emirbayer 1997).

Such a multi-sited ethnographic approach follows people, connections, associations, and relationships across space, understanding the global logistics industry to be "substantially continuous but spatially non-contiguous" (Falzon 2009, Marcus 1995). To highlight the frictional and fractious processes and social relations of production and circulation, I trace the heavily infrastructural and socially and materially complex logistical struggles involved in the movement of commodities across the Pacific. Following Anna Tsing's (2005) study of resource frontiers and sites of extraction in

Indonesia, my dissertation seeks to illustrate how the universalist aspirations of contemporary capitalism actually find grip in the "frictions" of encounter with heterogeneous, conflictual, and unequal inscriptions of corporate globalization on local ground. In writing an "ethnography of global connection" (Tsing 2005), I seek to follow the conflictual encounters that arise as global networks meet the ground in the frictions of place and subjectivity.

Yet my dissertation also undertakes a somewhat unorthodox ethnography of movement: rather than moving myself as a researcher from point to point between geographically non-contiguous sites of study, as multi-sited ethnographers typically do, I remained on a ship as it moved across a contiguous ocean. A slight difference, perhaps. However, unlike the existing accounts of supply chain labor that focus on particular landed sites of industrial production (Burawoy 1982; Salzinger 2003; Ngai and Chan 2012) or the resource frontiers and sites of extraction that supply global commodity chains (Bair 2009; Bunker and Ciccantell 2005; Baglioni and Campling 2017), my dissertation's ethnographic focus is novel in that it undertakes a study of the interstitial spaces of distribution that connect sites of production to the marketplace. In these in-between spaces, especially across the Pacific Ocean, commodities are quite literally in a process of transition: they are in a state closest to a literal instantiation of physical flow. The infrastructures and processes that aid these processes of distribution are thus the mediating conditions of possibility for resources to be produced and consumed in the places that they do. What I seek to underscore is that logistics produces a set of relations in which moving the world's goods across space comes to be understood as normative

and desirable, while containing the human lives that do this work is seen as necessary and productive.

A relational ethnography of this sort is committed to registering the phenomenological accounts of subjective experience, and to keeping one's politics closer to the ground in order to understand the often unexamined consequences of large political technologies on ordinary people. At the same time, it is wary of instrumentalizing and deploying the subjective experiences of ordinary people in service of objectivist aims.[11] This dissertation remains as such committed to a critical, interpretivist approach to ethnographic practice, attentive to the way that social scientific categories and productions of knowledge are themselves entangled in the very relationships of power they want to interrogate (Hage 2005, Pachirat 2013). Admittedly, the form of writing I undertake here is experimental: it tacks back and forth between ethnographic account and theoretical exposition, seeking to understand how the macro logical and micro logical individual experiences of the logistical world are far from distinctive or isolated, but form part of a comprehensive context in which logistics is gaining hold as an increasingly hegemonic logic for organizing social relations. In this, I write without pretensions to the invisibility of the researcher, sensitive to how my own subject positions may have rendered things sayable or unsayable by my subjects, or may normalize certain modes of disciplinary inquiry.

Beyond formal interviews, this process of ethnography involved immersive experiences where I embedded myself in the situations I studied. On the ship, I took jobs

[11] See, for e.g. Laitin 2003, where he argues that "narrative" approaches are useful only insofar as they provide plausibility test for formal models, and should therefore be combined with large-n statistical work and formal models to generate more 'robust' findings.

working side by side with the crew on manual tasks such as cleaning, taking container readings, and scrubbing rust. On such days, the monotony of work prompted both thoughtful conversation as well as offhand remarks that revealed how the sailors variously negotiated their gender, ethnic, cultural and working identities. As a result, many of the insights presented throughout this dissertation were gleaned in the process of the embodied experience of work. My own subject positions were not exempt. As a Chinese-Singaporean cis-presenting woman living in the United States, my presence on the ship, especially while performing traditionally masculine work, often provoked responses that reflected anxieties, affinities, or ambivalences around the various features of my identity.

Despite cutting my hair off into a short crop, dressing conservatively, and maintaining caution about my personal boundaries, I was subjected to multiple forms of harassment on the ship. My presence as a cis-female forced me to see and hear things that I speculate a male ethnographer may not have had to experience. On one hand, these experiences often resulted in harassment, outright instances of assault, and casual misogyny. On the other hand, the gendered character of our interactions also often resulted in surprising conversations during which the seamen confided in me about their families, fears, and other intimate topics of conversation. Ethnography provided access in ways that formal interviews would have not. I was also able to assess my positionality in response to different social contexts on the ship, and quickly learned that being a woman researcher required a constant calibration of gendered performance – whether performing friendliness and warmth on karaoke nights, or hardiness during workdays. In this way, I variously positioned myself as a sympathetic confidant, a fellow southeast Asian to the

Filipino seamen, or a resident of the global North to the Europeans and Americans. Each situated identity allowing the seamen to confide in me based on perceived commonalities and divergences. In this way, ethnographic 'access' relied as much on my performances of gender and culture as it did on my ability to work and access the spatial organization of the ship. What follows in this dissertation, therefore, is an ethnography that does not attempt to position myself as a 'transparent eyeball,' but makes visible the feelings of power, complicity, and entrapment I experienced in the process of research. If indeed the politics of logistics work is produced through forms of spatial and social containment, embodiment, and segmentation, then the method itself must be proper to forms of intimacy shared and unveiled in the process of logistics' making.

VII. Chapter overview

The chapters in this dissertation chart three ways in which logistics, acting to facilitate and smooth long distance-trade through the shipping industry, has produced new social relationships to the state and capital: through practices of security, infrastructural expansion, and the labor process. Each chapter examines the impact of logistics on lived worlds through different sites and thematics, moving from the impacts of logistical infrastructure on urban life and security culture in the port of Los Angeles, to the living labor of sailors on the Pacific Ocean, and the dead labor contained in the massive container ships that suture these distances across the Transpacific supply chain. Taken together, these three sites of transformation reveal important ways in which the rise of logistics organizes the relationship of the state and corporation to workers and ordinary people through extraordinary regimes of circulation-producing containment.

Chapter one examines how logistics 'solved' the problem of rising production costs by creating a different material structure for enabling the circulation of capital. Reading the rise of logistics through a Marxian theory of circulation, this chapter analyses the ways in which logistics metaphorically fixes "crises of over-accumulation" (Harvey 2014, 151-2; 1999, 379-80) through the geographical expansion of capital accumulation, requiring a constant investment in the creation of a built environment for production. Here, I explore how the managerial and material aspects of logistics often interface in frictional ways. The spatial infrastructures of distribution, from ports to rail corridors, are laid out to service the intermodal transfer of containers from one mode of transportation to another, demanding the global extension of logistical infrastructures across long distances, with destructive consequences for those whose habitats and livelihoods obstruct the pathways of flow. As such, I analyze the social and political outcomes of adopting a logistical viewpoint that demands "comprehensive systems thinking" rather than "functional tunnel vision." (Christopher in Gattorna 1990, 388). Comprehensive systems thinking can on the one hand allow firms to achieve greater efficiency and effectiveness in their operations. On the other, in practice, logistical systems require such complex coordination of the component elements of a materials flow system that a single disruption in the circuit can have effects that reverberate through the system. As I show, the imperative to build efficiency and fault-tolerance into the global supply chain led to the innovation of the shipping container, which regularizes circulation through the containerization of a vast array of goods into predictable units that can be controlled through logistical management systems. As such, I chart a theory of "circulation through containment" that draws a relationship between logistics as a

detailed domain and logistics as a heuristic for understanding the relations between the theory and practice of globalization.

In the effort to manage and control circulation, however, logistical systems open the economic system to new forms of vulnerability and breakdown. As Deborah Cowen felicitously puts it, "[d]isruption is the Achilles heel of the global logistics system" (2014, 56). As chapter two argues, it is not only that circulation requires *control*, as some scholars of mobility have argued,[12] but also that control takes new, more flexibilized and liquid, spatial forms that do not look like traditional forms of detainment such as the fence or border. As spatial and geopolitical technologies that facilitate the free circulation of goods and capital expand, they also create new forms of 'risk' that states seek to securitize through the reformulation of border practices. This gives rise to modes of circulation-producing containment that I refer to as 'liquid borders', where the state, in cooperation with corporate interests, employs strategies of risk-management to facilitate the constancy of goods circulation, with direct effects on the mobility of ordinary people and workers. Accordingly, the rise of logistics does not lead to the dilution of the significance of the nation state by any means, as the theorization of globalization as a 'space of flows' would imply. Rather, clarifying the constitutive relation between circulation and containment in practices of security, chapter two demonstrates that the nation state is joined by a range of subnational and supranational configurations in supporting the global expansion of capitalism.

[12] Following Foucault's lectures in *Security, Territtory, Population,* some scholars of mobility and circulation argue that circulation follows a new art of government, in which the facilitation of movement is a strategy of control rather than its diminishing. See, for e.g. Sheller and Urry 2006, Salter 2013. While I follow and agree with these assessments, I also stress the insufficiency of control in order to insist that subjects of circulation are constantly exceeding and disrupting its grip.

In chapter three, I examine how the imperatives for capital to expand its circulatory capacities produce its own irrational rationalities. The increasing demands of just-in-time logistics require fixed forms of infrastructure that are constantly superseded by the demand for ever larger (and thus more efficient) transport systems. In the past decade, container ships have more than doubled in size as shipping carriers have sought to capture economies of scale in transportation, fuel and crew costs. The rise of megaships has placed new demands on global shipping infrastructure, requiring ports to make perpetual and capital-intensive adaptations to their infrastructure, placing heavy demands on logistics labor, and generating a global shipping crisis of overcapacity. As ships keep getting bigger, I examine the effects of this expansion as ports struggle to catch up. This need to expand port capacities has resulted in large-scale experiments with geo-engineering, from reclamation and dredging to island removal. By juxtaposing megaship construction with the destructive processes of infrastructural expansion they demand, I argue that the material systems of global supply should be understood not as durable infrastructure — public works that stimulate local economic development — but as unendurable monstrosities that imprint the colonial violence of global circulation onto the lived spaces of vulnerable urban populations.

Chapter four moves from the macrostructures of the state and corporation to the heterotopic space of the container ship and to the micro-politics of containment operating through the seafaring labor process. Through ethnography of laboring life on board a container ship, I illustrate how logistics operates as both a managerial logic and a material arrangement to create circulatory regimes for the containment of working bodies. Here, I consider how the broader operations of circulation and security I

examined in the previous chapters meet the ground in the quotidian and affective embodiments of logistics in seafaring life. By zooming in on the ship as a space that simultaneously contains seafarers as they move goods across the world's oceans, this chapter seeks to show how circulatory regimes of containment work through intricate labor control mechanisms that confine and hierarchize seafaring labor.

This chapter builds on Timothy Mitchell's (2013) argument that since transoceanic shipping operates beyond the territorial spaces governed by labor regulations, it allows corporations to do away with the hard-fought democratic and labor rights struggled for and earned within local labor contexts. The forms of legal oversight and ambiguity allowed by the international ocean allow shipping corporations to escape national labor laws, regularly flagging their ships out so as to drive down wages, employ dual wage regimes, reduce the workforce while intensifying work, erode health and safety standards, and avoid regulation. While this makes for an international constitution of seafaring work that others have argued produces unexpected forms of solidarity (Gilroy 1993, Linebaugh and Rediker 2013), I show how the demands of seafaring work in a logistical age produce social, gendered, and racialized difference that pit workers against each other, even within a single ship's crew.

As I argue, a defining condition of seafaring work is the segmentation and confinement deemed necessary to maintain the mobility and efficiency of containerized shipping and the supply chains of which it is part. In the logistical age of an accelerating and expanding capitalist world market, the intensification and acceleration of circulatory regimes simultaneously results in the proliferation of working conditions and spaces that are constricted and contained in both spatial and social terms. As global supply chains are

restructured according to the demands of just-in-time management, one overlooked outcome of demands for speed and efficiency is their effects on the seafarers responsible for moving ninety percent of the world across the oceans. The circulatory regimes of capital that the labor of seafarers enables corresponds to their simultaneous confinement and exclusion, both in terms of their spatial and social mobility.

Taken together, the four body chapters of this dissertation examine the relationship between containment and circulation through four arenas: the managerial and material practice of logistics, the securitization of goods movement, the expansion of infrastructure, and the labor process. While far from exhaustive, these cuts into the transpacific supply chain identify four crucial ways in which distance and containment operate to facilitate and expand, rather than slow down or hamper the functioning of global commercial circulation. The strategies and zones of containment that characterize contemporary practices of supply chain management build upon one another, not only expanding the geographical distance between sites of production and sites of consumption, but segregating the work of circulation from those dependent on its smooth functioning.

I close my dissertation by considering the implications of this argument for questions of political and social transformation. If, as I have argued, logistics employs concealment and containment as mechanisms of control over the circulation of global capital, two seemingly contradictory yet united strategies characterize supply chains. On one hand, modes of containment work within supply chains to exacerbate unevenness and inequality, separating those who conduct the dangerous, isolated, and confined work of circulation from those who benefit from it, in both social and spatial terms. On the other

hand, unifying production and distribution processes across an integrated intermodal system entails that spatially unconnected sectors of labor are drawn together at a previously unseen scale. In fact, even though logistics labor is precarious, dangerous, and highly racialized, organizing efforts in logistics sectors have been growing "precisely by virtue of their global scale and strategic political geographies" (Cowen 2014, 126).

In my conclusion, I ask whether the zones and strategies of containment that logistics has sought to produce allow us to imagine, in turn, strategies to contest capitalist domination. Logistical technologies and practices work to shape the social and material relations between protected spaces of movement and sites of containment. But in doing so, they also potentially suture disparate components of the supply chain together through the intermodal containerization of goods, offering new possibilities for tactics of resistance and disruption along the supply chain. Resistance in the form of labor actions, strikes, and blockades have seized upon logistics' reliance on gateways of distribution and precise delivery schedules to seize the bottlenecks of flow that make circulation improbable or even impossible.

These disruptions suggest that while the global extension of the supply chain may have worsened working conditions for segments of labor, it has also connected previously disparate workers along an integrated but volatile circuit. As the stretching of supply chains around the world make them highly vulnerable to interruption, they offer ripe possibilities for workers to more effectively contest their hierarchical and violent effects. I conclude by asking how those interested in interrogating the rise of the logistical global economy might also pay attention to the people who have refused to be determined by it. Movements to interrupt capital circulation offer a glimpse of possible

"counter-logistical" projects that may have the potential to disrupt the circulation of capital in ways that are not purely destructive, but that seek to build an ethics of solidarity in which an infrastructural commons articulates the possibility for a future after logistics.

Interlude 1.
The Slow Boat to China

"In civilizations without boats, dreams dry up, espionage takes the place of adventure, and the police take the place of pirates" (Foucault 1984, 8).

Figure 1: The *Ever Cthulhu*
Port of Long Beach, California, USA

There is uncanny beauty in the monstrous. This, at least, is the feeling that seizes me as I stand under the colossal *Ever Cthulhu* berthed in the Port of Los Angeles.[13] The ship's hull alone rises eight stories into the air; even from a distance, I am unable to capture its full length or height within a single camera frame. In describing the ship to my friends and my family, I have sought to make adequate comparisons between its size and more familiar objects: The *Ever Cthulhu* is 333 meters (1,100 ft.) long, 43 meters (141 ft.) across, and 70 meters (230 ft.) high. It is taller than an eighteen-story building, the Arc De Triomphe, or Niagara Falls. It as long as a line of seventy cars, the Eiffel Tower

[13] At Evergreen's request, in order to have obtained IRB approval for my research on board, I have agreed to withhold the name of the ship and the identity of its crew members. *Ever Cthulhu* is moniker; I could not resist paying tribute to sea monsters.

tipped on its side, two Roman Coliseums, four New York City blocks, or six and half White Houses. I've had a lot of practice picturing this ship. Even so, when I am finally at the foot of its immense mass, I can scarcely believe that this monstrosity will be my home for the next 47 days.

I have entered the port's gateway with very little fuss. As a Singaporean citizen living in the United States for the last ten years, I am well acquainted with long lines, laborious checkpoints, and stern homeland security agents who scrutinize my passport with wary questions. This time, I banter with two female security guards at the Evergreen terminal in the port of Los Angeles whose only suspicion is why anyone would want to take the journey I'm on, and board a shuttle bus that drives down a lane flanked by multi-colored containers stacked four high and scores deep, forming long passages along which trucks and cranes stop to pick up their loads. We pass forklifts, spreaders, and trucks with empty chassis, which sweep past in well-oiled synchrony. Less than a 2-minute drive later, I am deposited at the foot of the ship, and I still haven't shown anyone a passport. Staring up at the vessel, feeling dwarfed by the legs of the gantry cranes that loom far above us, I am directed to a steep and narrow metal gangway ascending seven stories to the deck – the only connection between the ship and land – which shakes and bounces as I drag my suitcase up its 59 steps.

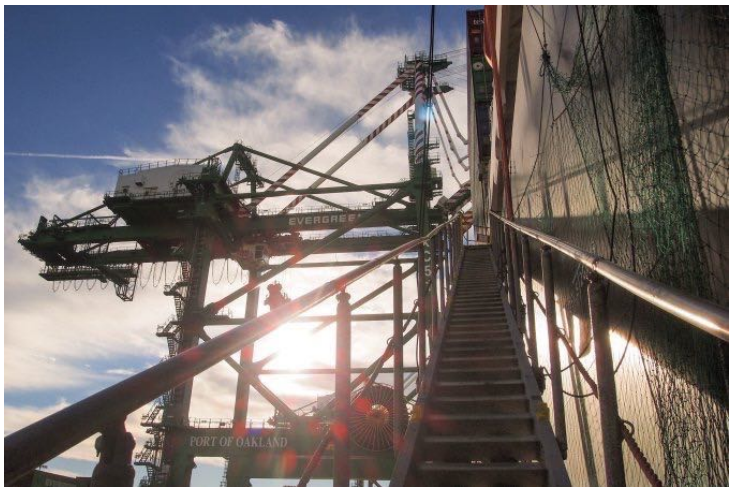

Figure 2: The steep metal gangway leading to the ship's deck

A tired-looking seaman in work coveralls greets me at the top. Shortly after, the steward appears – t-shirt, jeans, flip flops, an insouciant half-smile – and leads me through a hatch and into the "castle," the building-like structure on a ship that houses the accommodations, offices, two mess rooms, two recreation rooms, a kitchen, a gym, a swimming pool, a sauna, and most importantly, the bridge, the room at the top of the castle where the ship's navigation and command takes place. In comparison to its mammoth exterior, the ship's interior feels like an office – a quick transition from the mighty to the mundane. The hallways are not wide enough for two people to walk abreast; the doors are heavy and swung tightly shut; there are no other people in sight. We enter a tiny elevator ("huge by ship standards!" the Chief Officer later informs me) to my cabin on G deck, seven floors above the gangway, and the highest level of accommodations. I am placed in the cabin that used to house the supercargo. Until the mid-nineteenth century, the supercargo was the second most important person on the ship, next only to the captain. This person was employed to oversee the cargo, manage all merchandise, and sell it in port. Today, the position has become almost obsolete in a

shipping industry ruled by complex algorithmic frameworks running large datasets through computers in a clerical office, which ensure a continuous circulation of freight between sites of production and major consumption markets. Which parties transport, receive, and sell the freight has been determined well before stowage begins, and the supercargo is a freight clerk who prepares reports on shore.

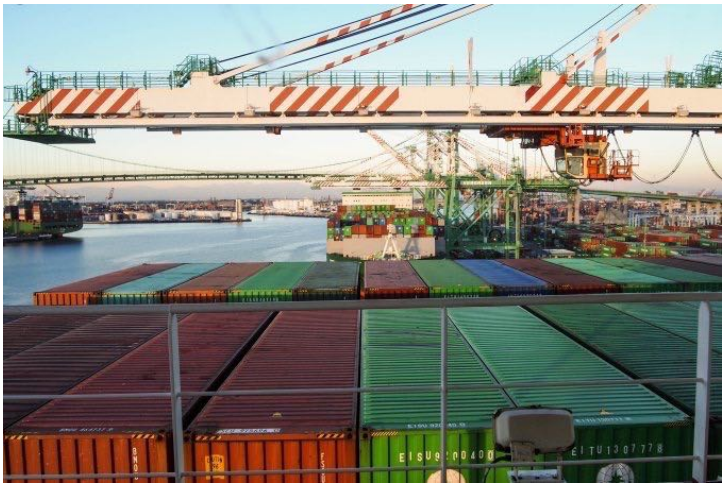

Figure 3: The view from the author's cabin

In the automated era, there is little reason for supercargoes to come on board a container ship, but shipyards still built a supercargo cabin in the event that they do. When they don't, paying passengers get to enjoy one of the best accommodations on the ship: my cabin is a splendid room with a long couch, a large double-door wardrobe, an L-shaped desk, a TV and DVD player, a double bed with a large side table, and a modest bathroom. I unpack quickly and head to the bridge to watch the last of the cargo being loaded, where I am afforded a 360-degree view of the buzzing port. The fore and aft of the ship are being stacked with containers 6 high, 17 across, and I have quickly lost count of how many deep. I count the seconds: it takes the massive gantry cranes less than a

minute to stack each container. A skilled crane operator drives a carriage that slides back and forth, picks a container up from the waiting truck below, slides forward with it dangling from its massive arms, and gently deposits it into its designated slot on the ship. In red, evergreen, orange and blue, they unfurl in front of and behind me as if I am in a giant modular playground. I have found that I do not grow tired of staring at them.

Perhaps we have grown used to being in awe of monumental instruments of control. After all, the Champs-Élysées, that sprawling Parisian avenue of beauty, was part of Haussmann's post-1848 renovation strategy to make the erection of barricades impossible, and to furnish the shortest route between the barracks and the workers' districts. But if, as Walter Benjamin suggests, the institutions of the 19th-century bourgeoisie's worldly and spiritual dominance were to "find their apotheosis within the framework of the boulevards" (Benjamin 1999, 11) today's infrastructural godsend for capitalism may well be the container ship: With a carrying capacity of 8,100 TEUs (or twenty-foot equivalent units – the length of a standard container – although today 40-footers are the norm) that can shoulder a total weight of 101,000 tons, the *Ever Cthulhu* would require a 40-mile line of trucks to transport all its cargo. When it was built in 2006, it was the largest ship in the world. Less than a year later, Maersk introduced a new ship class with a capacity almost double that volume, and today, owns the world's largest ships at carrying capacities of 18,000 TEUs each. Post-Panamax carriers such as the *Ever Cthulhu* – ships that exceed the maximum dimension that can fit in the Panama Canal – comprise 16% of the world's fleet, but carry more than 45% of seaborne goods. While maritime shipping companies endeavor to use the largest container ships possible in order to benefit from economies of scale, however, port infrastructure and

equipment has not always been able to expand commensurate with the needs of these vessels: deepened harbors, faster loading and unloading times, better intermodal infrastructure, and skilled labor that can keep apace with rapidly changing port machinery are all demanded, but the large capital investment required to perform these tasks has posed severe limitations to the unmitigated expansion of ship sizes.

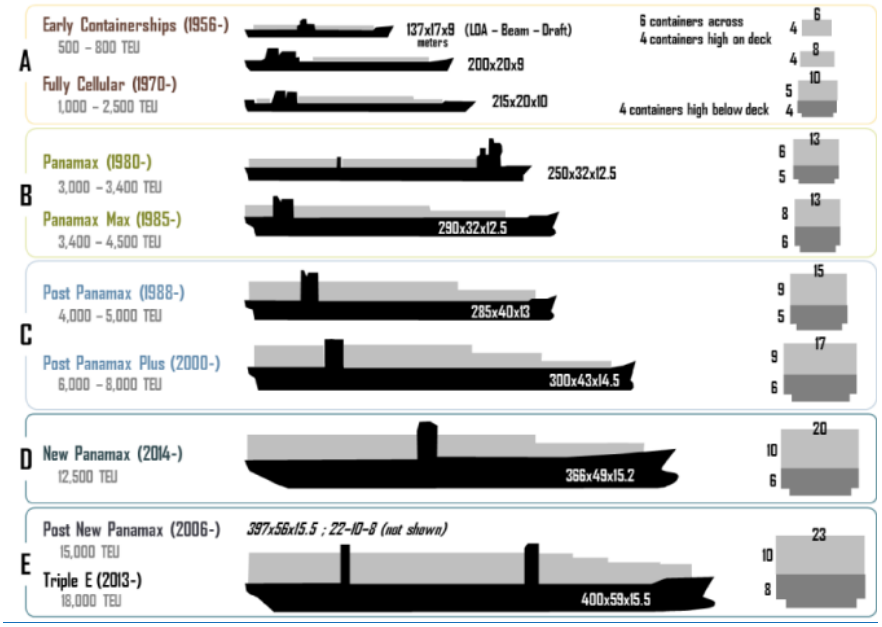

Table 1: A diagram of ship sizes. Source: Ashar and Rodrigue, 2012.

The captain tells me that the *Ever Cthulhu*, like all other ships, never stops for a break. It continues traversing the globe's surface in 45-day rotations, reaching one end of its route and turning around almost immediately. Container ships are monuments that move, and 100,000 of them ply the oceans at any given moment. In 2014, the *Ever Cthulhu* traveled a total of 103,000 sea miles — halfway to the moon. All that distance, all that steel, all that power. Yet, even ships as large as these require very little human labor: a few seamen to navigate, engineers to monitor the ship's internal workings, others

to keep watch, clean, fit, change the oil. The *Ever Cthulhu* itself has a crew of 22 men – four German, one Polish, seventeen Filipino, and one passenger: myself. Across the world's ocean, 1.5 million invisible seafarers toil on three to nine month contracts to bind the world together through trade, though they remain, for the most part, isolated in their cabins and mess rooms, retained on precarious short-term contracts, and kept away from their families – indeed, from most of the world. The third mate, a young Filipino, tells me that all his sacrifices are worth it for a salary that pays much more than he could possibly hope for on land. In some sense then, as a container of both aspiration and drudgery, one might think of the ship more as a space than an object; a floating island of both hard labor and the possibility of better futures. It is no wonder that Foucault calls the ship the "heterotopia par excellence":

> "The boat is a floating piece of space, a place without a place, that exists by itself, that is closed in on itself and at the same time is given over to the infinity of the sea…the boat has not only been for our civilization, from the sixteenth century until the present, the great instrument of economic development, but has been simultaneously the greatest reserve of imagination" (1984, 9).

From wide boulevards to floating archipelagoes, material infrastructures work everywhere, in under-examined ways, as networks that allow us to live, to dream, and to desire — but in circulating and drawing resources from across great international distances, also proliferate great inequalities and political technologies of rule.

As part of my dissertation project to investigate the links between logistics infrastructures, supply chain labor and the geographies of uneven development, I have booked my passage on the *Ever Cthulhu* for 100 Euros a night. Beginning its

journey in Los Angeles, the ship will stop in the nearby ports of Oakland and Tacoma, and then make its way west across the North Pacific Ocean, before reaching the east coast of China. There, it will stop at the ports of Kao Hsiung, Yan Tian and Hong Kong before reaching its final destination in Taipei, 36 days after leaving LA.

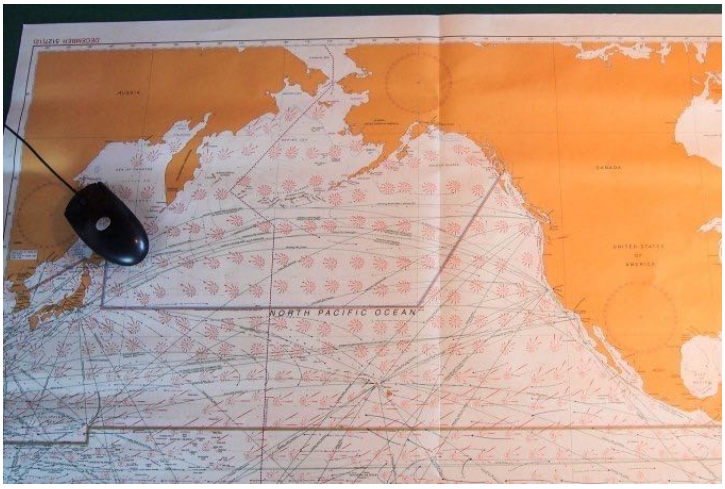

Figure 4: From the captain's desk, a map depicting the passage we will take across the North Pacific Ocean.

This trans-pacific passage is of particular interest to me because it is by far North America's largest trade lane, and accounts for nearly twenty million TEUs in U.S. trade alone. This U.S.-China market is dominated by large U.S. retailers such as Wal-Mart, Target, Best Buy, and Home Depot – companies notorious for cutting labor costs by using the enhanced mobility of production sites to shift work to third parties, erecting cruel hierarchies in both their Chinese factories and U.S. stores. Transoceanic shipping is, in large part, responsible for these widening inequalities: since shipping operates beyond the territorial spaces governed by labor regulations, it allows corporations to do away with the hard-fought democratic and labor rights struggled for and earned within local labor contexts. The internationalization of the supply chain, in other words, is aided by increasing innovations in the speed and efficiency of the shipping market. As a result,

circulation has been folded into the production process, becoming a field of experimentation for value-generation in its own right. Of course, there are highly uneven aspects to this story of logistics. Even as members of the International Longshore and Workers Union negotiate their contract under embattled circumstances on the west coast of North America (MAREX 2014), truck drivers struggle against overwhelming legal barriers to unionization in Oakland and LA (Bensmen 2014), port workers in mushrooming Chinese ports can scarcely dream of ILWU wages or safeguards, and factory workers around the world still work with few protections under the poverty line. The world of logistics looks very different indeed from the perspective of Shen Zhen, California, or the Ocean.

Ethnography may be an unseemly choice against this dizzying and daunting backdrop of structural transformations. I do not know how much I will find out, how much will make sense, or how much will be useful. I am cautious about being the only woman on the ship, more cautious still about the potentially arrogant, certainly intrusive position of the paying passenger-researcher on board. There are some things I do know: Seafaring work is an endeavor practically invisible to all of us who benefit from the toil of sailors, and remains one of the most contingent, yet internationally diverse forms of labor. The embodied experience of traveling across the ocean is a journey few have taken in the decades since air travel. We know that capital fantasizes about the annihilation of space and time as its moves goods from space to space, but I want to experience the long, slow journey that is responsible for moving ninety percent of the world's trade. In ways that may never make it to a page, I imagine that this feeling of being afloat, suspended

between continents, trying to understand value in motion from one of its most liminal spaces, will stay with me long after I am done researching.

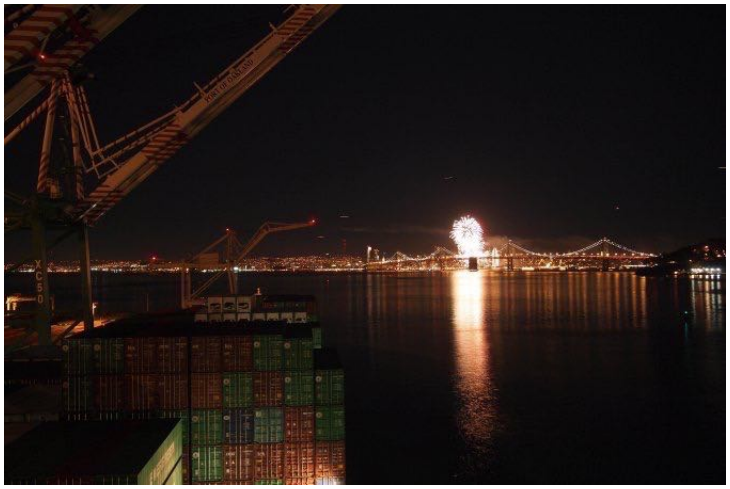

Figure 5: Fireworks on New Years' Eve explode over the Golden Gate Bridge, while the crew and the author watch from the ship's wheelhouse.

We sail into the port of Oakland on New Years' eve. That night, the captain opens the 'slop chest' – the onboard storage room from which the crew can buy beer, wine, and cigarettes. For the special occasion, he has even gone on shore and brought back a 2-litre bottle of whiskey, even though hard liquor has now been prohibited on Evergreen ships. As we near the midnight hour, the chief officer makes an announcement for everyone to come up to the bridge, where we have an uninterrupted view of the San Francisco skyline. Champagne is handed out to everyone; some are in t-shirts and shorts, others in work coveralls, still others dressed in shirts and pants for the occasion. At 11:59:50, we count down from ten together, and then watch as fireworks leap into the air from the San Francisco shore. Some of us have just met; others have been stuck in the same box for six months or more. But as we watch the world celebrate from a distance, cocooned by the

ship's glass windows and thick steel walls, it feels, at least for a moment, like we have embraced each other as a village.

Chapter 1.
Infrastructures of Circulation: Containerization and the Logistics Imaginary

I. Introduction

This chapter examines the rise of the global logistics industry and the system of containerization that enabled its spatial reproduction as central infrastructures in the transformation of global circulation. As imperatives to accelerate the turnover of capital have intensified efforts to control and coordinate the circulation of commodities across the world, logistics has become both a form of calculative reason and a social-material order that organizes the displacement and exploitation of poor and working people in terms of their relationship to economies of supply. In this chapter, I chart a brief history of the rise of logistics and containerization in order to show how, as conjoined expressions of the logic of capital circulation, they produce profound re-organizations of global space - and the social relations within and between these spaces - in service of expanding the total social circuit of world capital. While the disparate functions of goods movement have long been individually recognized as central to all economic activity, it was not until fifty years ago that the concept of logistics as an integrative system took hold in the business imagination as a way to organize profit. This strategy of accumulation relies on translating practical concerns with the management of physical flow into material practices of distribution that organize diverse processes into a networked system of transit infrastructures united by the shipping container. As I show, when these systems of containerization are coupled with logistical forms of management, they create a powerful technology for expanding and accelerating the circuit of capital in ways that lead to the increasing control and coercion of ordinary people.

While numerous books and articles have traced the container's historical emergence and its role in the globalization of supply chains, fewer scholars have contextualized its development within the rise of the logistics revolution. In doing so, I situate logistics and containerization as conjoined developments that brought a managerial approach to the integration of global supply chains together with a material infrastructure for this expansion. I thus add to existing scholarship on globalization by examining how the growth of global supply chains, when understood through the rise of containerization and logistics, did not simply produce new possibilities for *mobility*, but instead reconfigured the relationship between fixity and flow in the global economy.[14]

As such, the aim of this chapter, and this dissertation more broadly, is to ask: what drives the expansion of logistical infrastructure, and in what way does it produce human subjects as secondary to the flow of goods and the total circulation of the economy? To answer this question, I trace transformations in the temporality and spatiality of circulation in order to understand how theories and technologies of logistical management meet the ground in ways that produce economic growth and mobility for some, but inequality and containment for others. When fantasies of smooth flow are brought into contact with concrete materialities and social relations, the expansion of logistics and containerization produce new possibilities for goods mobility, while containing and controlling the mobility of people in the process. As this chapter will argue, the container is thus not a singular thing but part of the infrastructure of a logistical

[14] For examples of literatures on how containerization changed global supply chain dynamics, see Marc Levinson (2006); Craig Martin (2012; 2013); Birtchnell et al. (2015).

system, whose worldwide implementation has simultaneously reconfigured new spaces of movement and circulation, and intensified fixed forms of containment. The frictions between logistics' implementation and imagination thus particularly emerge when demands for accelerating and increasing the mass of global circulation require forms of intense control and coercion for those who work and live around supply chains.

Harbors past and present

The drive into the Port of Los Angeles is one that few city dwellers take. About twenty-five miles south of downtown Los Angeles, the port spans 7500 acres along the waterfront of the San Pedro and Wilmington neighborhoods, which also sit on top of the United States' third largest oil field. What greets you, if you make the journey, is a Dickensian panorama of industrial chimneys, oil pumps, storage tanks, and smog. The road toward the port is flanked on either side by a string of trucks that shake the ground and cover the air in a sheet of smoke. Portal cranes, each painted with the trademark colors of their companies, tower high above your head, capable of unloading container stacks rising 200 feet into the air. Their gantry beams fan out in symmetrical rows along the docks; candy cane-striped for Evergreen along one berth; Maersk blue across the channel. A massive cargo ship is pulling into port carrying over 100, 000 tons worth of clothes, shoes and electronics, while other vessels wait patiently to be unloaded at berth. In the container yards far below, rows and stacks of brightly painted containers closely resemble the city grid you just left behind, where workers, barely visible from within their tractors, are lifting and stowing containers in a series of smooth movements. Human life, if visible at all, is encased in windowed vehicles and regimented movement; more an

appendage to a vast machine than lively labor itself. Warehouses that have stood at the docks for years are being razed to make way for more transportation infrastructure. Trucks line up for hours at the port gateways. Railway lines snake across the landscape, crawling inward into the hinterland.

Connecting a global supply chain of goods from the oceans that carry a vast array of commodities to the cities in which they are sold, these infrastructures of circulation are ubiquitous. They extend the networks of commodity distribution well beyond the maritime port of entry, creeping inland into the sinews of the city, and outward on over 50,000 ships and maritime trade routes that move across the oceans. Yet despite its centrality to the making of global relations, the port has largely slipped out of view in the contemporary imagination, having moved out of the center of cities and thus to the edges of the public's consciousness.

This was not always the case. When Friedrich Engels sought in 1845 to understand the living and working conditions of the working class in England, he began his analysis from the standpoint of the deck of a ship coming into harbor:

> "I know of nothing more imposing than the view which the Thames offers during the ascent from the sea to London Bridge. The masses of buildings, the wharves on both sides, especially from Woolwich upwards, the countless ships along both shores, crowding ever closer and closer together, until, at last, only a narrow passage remains in the middle of the river, a passage through which hundreds of steamers shoot by one another; all this is so vast, so impressive, that a man cannot collect himself, but is lost in the marvel of England's greatness before he sets foot upon English soil" (Engels 1968).

For Engels, the maritime panorama offers an expansive view of the city from which one could marvel at the technical sublime. The harbor's busy movements afford at first sight

an admiration and even optimism about the economic life of the city. But this is quickly replaced by a sober realization about the immiseration that is at the heart of these developments:

> "The sacrifices which all this has cost become apparent later. After roaming the streets of the capital a day or two, making headway with difficulty through the human turmoil and the endless lines of vehicles, after visiting the slums of the metropolis, one realizes for the first time that these Londoners have been forced to sacrifice the best qualities of their human nature, to bring to pass all the marvels of civilization which crowd their city; that a hundred powers…have been suppressed in order that a few might be developed more fully and multiply through union with those of others" (Engels 1968, 68).

The spatial move from the maritime scene to the street is what elicits Engel's understanding that "capital, the direct or indirect control of the means of subsistence and production," carries out a "social warfare" on "the poor man" (ibid, 69). For Engels, seaport towns from Dublin to Liverpool afford the panoramic gloss from which the city first appears as a center of "commerce, wealth and grandeur," providing stark contrast to the "narrow, dark, damp" alleys and cellars from which Engels later observes the "barbarity" of working conditions (ibid 76-79).[15] The arteries of maritime trade that bring commodities into shore are, for Engels, simultaneously conduits of wealth and poverty, allowing him to articulate a crucial political economic insight: that a fundamental feature of capitalism's development is the inequality and exploitation that underlie the social relations of production.

If the harbor provided Engels with a narrative entry point into his analysis of working class conditions, today few scholars of political economy would begin an

[15] For an elaboration of the aesthetic politics of Engel's interest in the harbor, see Allan Sekula 1996, 44-47.

analysis of contemporary capitalist relations with one's arrival from the sea. The harbor rarely features in the public eye as a place central to economic and social life, and ships carry steel boxes, grain, or cars, but very few humans to shore. Even though maritime supply chains bring almost all of the commodities we own and consume to the marketplace, these spaces of trade circulation remain relatively invisible to large sectors of the population, hidden behind walled districts and industrial zones on the outskirts of urban life. Instead, the market is more familiar to us as an abstract and organic sphere, articulated through stock prices and data flows rather than through the concrete materialities that move the world's trade through a vast infrastructural system of ships, warehouses, and other transport infrastructure.

Today, Engels' narrative decision to begin a critique of capitalism through the aesthetic and spatial juxtaposition of the open, infinite sea with the enclosures of the city may seem strange to audiences familiar with the function oceans and harbors served in expanding the extractive economies of the British Empire. What Engels imagined to be the ostensible romance and wonder of the harbor - a site that inspired poetry, paintings, and imaginations of freedom (Casarino 2002, Taussig 2002) - has in fact long been a site of brutal work, impoverished conditions, and slavery (see, for e.g. Ahuja 2006). Harbors have never been simply sites of safety or leisure, but sites of spatiotemporal control, bondage, and exploitation.

Indeed, the oceans were central to the circulation of colonial power. Architects of British empire in the early modern period aligned a conception of merchant imperialism with the exploitation of faraway spaces not only through the domination of land – by setting up extractive institutions of settlement and plantation – but also by seizing critical

gateways to the world's oceans, and access to the crucial shipping lanes such seizure would provide (Subrahmanyam 2006, Tracy 1990). As Ince (2014, 112) argues, colonial networks were "central as social spaces providing the concrete conditions for imagining and experimenting with new ways of organizing social production for profit." The work of securing the conditions of global circulation is deeply rooted in imperial history. As contemporary supply chains intensify processes of maritime commercial exchange, they echo these imperial histories, underscoring that the separation Engels sought between an open sea and an exploitative urban center is instead a circulating space of exploitation between metropole and colony.

Yet, harbors today are distinct in their intensification of the relationship between movement and enclosure. With the worldwide adoption of the 'intermodal' shipping container - a steel box that transports freight between multiple modes of transportation (from ships to rail and truck) - maritime space itself has become a site of simultaneous movement and enclosure. It is not only goods that have become contained within the bounds of the steel box. As shipping containerization created a global system of regularized compatibility, bringing previously disaggregated sectors of sea and land transport into an integrated network, they also reconfigured the cultural and regional geographies of port cities.

The transformation of the London harbor that so enlivened Engel's narrative provides an example of these shifts. In 1961, the British Cabinet commissioned an inquiry into the efficiency of British ports, which found that port operators should prepare their facilities for containerized vessels in order to keep the port commercially viable (Jamieson 1996, Rochdale Report 1962). Known as the Rochdale Report (1962), this

enquiry found that Britain would risk losing crucial container traffic to other continental ports such as Rotterdam if they did not make adaptations to their infrastructure. The Port of London Authority (PLA) followed these findings and argued that to remain competitive, they would have to move their main operations out of the Pool of London to Tilbury, on the Essex Coast (Martin 2012, 147). The PLA invested heavily in deep water berthing at the Tilbury Docks, constructing seven container berths by 1967. Within a year, Tilbury was handling 7/8ths of London's entire tonnage, leaving the London harbor virtually empty of cargo ships in a short time. Were Engels to enter London through the Docklands today, he would witness an entire change to its urban geography: under subsequent "regeneration" that occurred under the Thatcher government in the 1980s (Martin 2013, Smith 1989), the area is a major financial center, and the docks serve no commercial purpose except as a tourist attraction.

As the shipping container standardized a previously unwieldy and costly world of transportation into a system of formal geometry, it necessitated a reconfiguration of not only docking facilities, but also the other infrastructural linkages that produced an integrated transport system across different modes of sea, land, and rail. Containerization drastically reduced the amount of labor required to handle cargo by almost 90 per cent, leading to not only significant cost savings for shipping companies, but also providing an economically viable way to offshore manufacturing to underdeveloped nations where labor costs were cheaper.

A system of containerization provided the motive force for reconfigurations of mass production, shifting the spatial politics of production, and reconfiguring spaces of work and residence in ways that facilitate capital accumulation on a world scale. In fact,

for David Harvey, the development of intermodal containerization was "one of the great innovations without which we would not have had globalization, [or] the deindustrialization of America" (Harvey, cited in Buchloh, Harvey, & Sekula, 2011). In this sense, to a global logistics system premised on the smooth functioning of a containerized supply chain, the ocean is not so much a space of freedom as it is a functional transportation surface, aiding the transfer of containers across global space and into different infrastructural contexts.

II. Containerization and the making of global transportation infrastructure

The history of containers and the system of containerization has been a relatively well-documented area of study in maritime and shipping industry history (see Hunter, 1993; Cudahy, 2006; Levinson, 2006). My intention is not to replicate this historical literature, but to think about how the shipping container - as both an infrastructure of mobility and a material instantiation of the strategic standardization of scale-making practices - produces a distinct relationship between circulation and containment, one that seeks to regularize the certainty of goods mobility through the productive containment of not only goods, but also ordinary people based on their relationship to systems of supply. My focus on containerization aims to do more than add an additional understudied 'factor of production' to research on the mobility of commodities.[16] Rather, containerization constitutes one of the conditions of possibility for, rather than simply being an effect of,

[16] In the specific context of mobility studies, although there is an established body of work on corporeal mobilities (Bissell, 2010; Middleton, 2009), automobilities (Featherstone, Thrift & Urry, 2005; Merriman, 2007; Packer, 2008), aeromobilities (Adey, 2010), cycling (Spinney, 2006), foodstuffs (Cook & Harrison, 2007), there has been a limited approach to the specific example of packaged commodity mobilities.

globalization. As a spatial infrastructure, the container is not only an example of mobility but fundamentally constitutes how mobility became modernized as a tool for capital accumulation across a variety of scales and registers. This assessment resonates with that of other scholars, who dub the container the single most important technological innovation underpinning the globalization of trade (2006; Rodrigue and Notteboom 2008). If we analyze the spatial impact of containerization, the container provides a lens for the consideration of the complex web of relational connections. It is intertwined in the development of an arsenal of strategic technologies and techniques to control the mobility of commodities through various strategies of containment on global and local scales.

Despite the container's ubiquity across today's urban landscapes as a figure of hypermodern mobility and innovation, it did not come into international use until the 1960s. In 1956, trucking magnate Malcolm McLean successfully inaugurated the innovation of the container by loading a tanker named *Ideal-X* with 58 containers he had designed to shift easily among ships, trucks, and trains. The innovation of a single modular box would proceed to change everything about the way that goods would move across cities, countries, and the seas. The container's modular form offered manufacturers and retailers a uniform box into which a vast array of goods could be safely stored and moved. This allowed cargo to be loaded and offloaded from water to wheels, allowing shippers to eliminate expensive and inefficient piece-by-piece freight handling costs. At the time, half the costs of freight were centered on the intermodal transitions between these vehicles: shifting loose cargo by the banana bunch or fabric bolt from ship to rail was by far the most time and labor intensive leg of the transportation process. The cost of loading loose cargo on a medium-sized ship was pegged at $5.83 per

ton. After the *Ideal-X* completed its momentous journey from New York to Houston, Mclean's experts calculated that transportation costs dropped from $5.83 to 15.8 cents per ton (Levinson 2006).

The changes this afforded the global logistics economy were paradigm-shifting: According to one academic study, the container caused freight rates between North America and Asia to fall by 40 to 60 percent (Levinson 2006, 354). The container was also more than twice as important in increasing flows of international trade between industrialized countries as governments' efforts to eliminate formal trade barriers (Bernhofen et al 2013). When the shipping company American President Lines studied Levinson himself is cautious about attributing all these vast changes to a single cause, but what is clear is that the sudden decline in freight rates was hugely consequential for the integration of the global economy. Where long distance freight costs had once accounted for 12 percent of U.S. exports – a cost more significant than even governmental trade barriers – the container made it possible to achieve monumental cost savings while increasing transport efficiency.

McLean's crucial insight, however, was not simply that the container provided significant cost savings, but that its adoption would require the reconfiguration of the entire system of transport, from the ships themselves to the architecture of docks, trains, and systems of container handling. This was the crucial point of containerization. Unitized systems of container cargo such as wooden boxes and pallets had been previously attempted, but their failure stemmed from the absence of an entire infrastructure to support their transportation. The 33-foot steel container was designed to hold more volume, and to stack on top of each other with a twist-lock system that would

hold them in place. More importantly, the *Ideal-X*, a decommissioned T-2 type tanker, was refitted with a deck that had a metal armature that allows the containers to be lowered into the framework without a longshoreman required to stow them. While break-bulk carriers had stowage designs that relied on the use of smaller interconnected spaces above and below deck, the container ships that were eventually designed to service the industry maximized storage space by designating every possible space in the ship, with the exception of a massive engine room and an accommodation 'forecastle', to the storage of containers above and below deck. Where the task of unloading a ship was once a dirty, arduous endeavor that took an army of workers days and even weeks to complete, containers could now be moved by a single operator in a single crane at the rate of one every thirty seconds (Coulter 2002, 134). Where previously boxes and pallets had to be lifted manually by shipboard winches, McLean designed dockside cranes to lift his shipping containers off the ship and onto the destination port deck, standardizing and drastically reducing the amount of labor required to unload cargo.[17] In addition, the transferability of the container into different modes of transport (known as its 'intermodal' capacity) made it possible to *physically materialize* logistics' conception of a diffuse, spatially fragmented supply chain as a singular entity, by enabling the material movement of goods to be inter-modally traced and transferred from a good's point of departure from the factory, to its journey across the ocean, to its final purchase on the shelf.

[17] Today, the standard container is 8ft wide, 8.5 ft. high, and comes in two standard lengths: 20 ft. and 40ft. This is the subject of chapter 3.

Far from being a single, discrete object, the container might be better understood as an infrastructure of mobility that sutures the continuity of circulation to the scale-making practices of global capitalism (Tsing 2005). Subsumed within the standardized design of the container are spatial, material and technological mechanisms designed to stabilize interconnections across the system of goods circulation (Martin 2012, 19). Efforts to 'stabilize' the flows of commerce through the container form thus conceal complex articulations of the dynamics of contemporary capitalism, and act to obfuscate the constitution of twentieth and twenty-first century global economic processes (Sekula 1996). As a storage receptacle, a mobile infrastructure, and an enclosure for keeping commodities in order, the term "container" thus functions in two senses: it both names the specific infrastructural innovation that developed a standardized transportation unit across modes, and more broadly points to the forms of *containment* that this innovation has enabled; that is, the container both stores objects and is a way of controlling and restraining various social relations in order to move goods through space. This quest to standardize processes of circulation intertwined with efforts to control and contain different forms of life based on their relationship to systems of supply.

As the rest of chapter will explicate, containerization came to organize the expansion of transportation networks in ways that created intense conflicts and containments between multiple and competing forces of control and flow. If we pay attention to lived interactions with the built infrastructure of intermodal shipping, we notice that containerization has two simultaneous and complementary aims. In order for it to institute a system of smooth mobility, and especially of accelerated mobility, containerization requires certain flows, goods, and even people to be boxed, concealed,

and contained. We can stretch the literal meaning of containment into an extended metaphor. As a process of economic standardization and automation, containerization demands the homogeneity of spaces while simultaneously relying on a field of uneven social and spatial relations

The unevenness of containerized infrastructure is central to the relationship between mobility and containment. In his study of capitalist geographies, Neil Smith (2008) emphasizes the centrality of infrastructure in enabling the survival and expanded reproduction of capitalism. As capital accumulation seeks new frontiers of accumulation, "concentrations of capital and labor" come to center in metropolitan areas, taking place alongside the "far-flung development" in other rural and semi-rural regions (Smith 2008, 159-60). The geographical expansion of capital accumulation into these regions therefore "requires a continuous investment of capital in the creation of a built environment for production" through the construction of "roads, railways, factories, fields, workshops, warehouses" that function as immobilized forms of fixed capital "central to the progress of accumulation" (Smith 2008, 159-60).

These uneven geographies are not only produced domestically within a given territory, but also have international dimensions. In expanding the search for relative surplus value, capital is "driven to convert" spaces across the globe that are seen as "external" and "relatively undeveloped" into places of production and accumulation. Through such processes of primitive accumulation, even "external" space is internalized and produced "*within and as part of the global geography of capitalism*" (Smith 2008, 187). Crucially, this global process of integration is also a process of unevenness and differentiation. As inherited disparities in levels and conditions of development produce

regions with differential determinations of the value of labor power, the cost of materials, and other elements of production, a "powerful centripetal force is felt as uneven geographical investments in transport systems feed further uneven geographical developments" (Harvey 2006, 101). In this way, the hierarchical networks that transport systems help to circulate ensure that capitalist development sustains itself "not through absolute expansion in a given space but through the internal differentiation of global space, that is, through the production of differentiated spaces" (Smith 2008, 120).

Following Smith and Harvey, this chapter proposes that containerization is a physical embodiment of these uneven dynamics. By instituting deeply interconnected infrastructural networks that privilege the movement of goods over other uses of space, containerized networks physically inscribe vast and uneven chains of integrated distribution structures, brought together through a complex division of labor and extensive networks of commercial exchange.

To understand how the container plays such a crucial role in the simultaneous integration and differentiation of spaces of capitalist development, the remainder of this chapter proceeds to broaden the historical and structural contexts within which the container emerged as a technical solution to various problems of transportation and mobility. I identify two elements that contributed to containerization's success as a globally implemented unit of transportation: standardization and scale-making. The first refers to the creation of system of rules, dimensions and classificatory schemes that organized both the physical object of the container and the systems that transported according to uniform dimensions and rules. The second, scale-making, combines the

former two practices in seeking to manage the scales - local, national, and global - at which commodities circulate.

Because containers standardized a diverse array of supplies into units that could be mechanically packed and stacked, they provided a technical solution to the logistical problems of supplying warehouses and battlefields with commodities and munitions. This cutting of complexity enabled the expansion of both capital and war by supplying both with a more predictable supply chain for fuel, labor, and other elements of production.

Second, because the container unit enabled deliveries to be made with more predictability and precision, it expanded state and corporate spatial imaginations of the world as a global transportation surface. The container became a universalized system of freight transportation because it was a scale-making method of abstraction, allowing states and corporations to construct large-scale infrastructures on the principle that different spaces were functionally exploitable sites of accumulation and transportation. Standardization and scale making were two technically and materially distinctive properties that facilitated the spatial expansion of containerization. In integrating the world system through a series of standardized infrastructural networks, however, they also helped to exacerbate the uneven geographies of accumulation.

Yet, the container's scale-making capacities are not simply a result of circumstantial technological diffusion. As Alejandro Colas argues, the shipping container, like other modes of transport and communication, "emerged from and into a world that was fragmented geopolitically into discrete jurisdictions yet (in its Western hemisphere at least) deeply integrated through capitalist social relations" (2018, 151). As the next section of this paper argues, the shipping container surfaced in the context of a

logistical economy, characterized by a growing alignment between the political organization of nations along territorial lines of sovereignty and the economic organization of capitalist social relations driven by flows of capitalist circulation. This section thus examines how the managerial business science of logistics provided an organizing framework for just-in-time supply chains, which contributed to the reproduction of systemic hierarchies and inequalities by recalibrating the relationship between states and markets. Logistics did not, by any means, *create* the growing alignment of states with markets, but it significantly contributed to their partnership by offering a configuration of technical rules and material systems that mapped onto existing interests and investments in the capitalist world order.

In the final section of this chapter, I bring the histories of containerization and logistics together to show how both processes help to fulfill and expand capital's capacities for renewal. Rooting these historical developments in a Marxist theory of circulation, I demonstrate that containerization and logistics acted in tandem to accelerate the expanded reproduction of capital, creating supply chain system that exacerbate circulatory regimes of containment.

Cutting Complexities: Standardization

The standardization of the container instituted a quantitative design by which the unpredictable elements of movement could be controlled and calculated. Standardization is a crucial feature of these developments, creating a standard unit by which diverse forms of cargo - from ammunition to raw marble, sand, and oil - are treated abstractly as homogenous units in a homogenized cargo handling process.

Consultants, states, and corporations alike saw the movement of the container through an entire commodity network as offering a universal means of economic and spatial control. In two reports commissioned in 1966 and 1967 by the British Board of Trade, the management consultants McKinsey & Company outlined the potential benefits of containerization for British trade, attesting to the wider global economics of containerization. *Containerization – Its Trends, Significance and Implications* (McKinsey & Co. 1966) outlined the likely benefits of the full implementation of containerization and its attendant infrastructural developments. Central to the report is the insistence that containerization should be recognized an "an urgent 'fact of life, and that all major Docks Board plans and decisions be reviewed—and if necessary modified—within the new context created by it" (McKinsey & Co. 1966, 2). In this, McKinsey drew a relationship between standardization, increased efficiency, lowered costs, and the spatial expansion of containerized infrastructure. The report draws four main conclusions from the move toward containerization. A worldwide implementation of containerization would result in first, a reduction in transport costs; second, larger economies of scale which would become possible with larger container ships; third, containerization would lead to the integration and consolidation of the transport industry; and fourth, containerization would contribute to the growing importance of transport for global trade (McKinsey & Co. 1966, iv). Stressing that containerized cargo is "effectively becoming homogenous," McKinsey argued that the "efficient use of expensive containers" would "require extensive route networks under unified control to allow load balancing" (ibid, 4).

The key aspect of these profound shifts and reorganizations of space lay in the impact of homogenization on cargo handling processes. Operating costs could be reduced

and efficiency increased only through the *standardization* of the system. Standardization eliminated the need to consider the specific material properties of the freight being handled, replacing the unpredictability associated with the handling of loose cargo with a steel box that could shroud and contain diverse materialities within a consistent, controllable form. The container facilitated "at a distance" control over specific global processes, since compatible standards, once put in place, can be trusted to work through a consistent set of procedures, even though they require continuous upkeep and management (Graham and Thrift 2007, 8). In one early assessment from the 1960s, Owen saw the potential of the container in its ability to offer protection to contents: "

> "Most types of liquids and solids may someday be moved in sealed containers interchangeable among road, rail, air, and marine transport. Advantages would include reduction in damage and loss in the time and cost of loading and unloading. Containers may prove to be the catalyst that integrates the various components of the transport sector which are now being independently planned, financed, and operated" (1962, 410).

This comment demonstrates the integrated possibilities the container was seen to offer: as the standardized unit that underpins an integrated distribution system, the container was understood from its inception not as a singular object but an infrastructural system, whose implementation sought to provide the material conditions for exchange and consumption across both space and time. As a discrete object, the container had no value or economic potential unless it received the infrastructural support of a vast distributional network of trucks, cranes, and port terminals to enable its transferability. As such, its usefulness hinges entirely on its modular application across transportation modes (Reifer 2004).

The role of standardization thus plays a key role in building a globally recognized system of freight mobility. The shipping container enabled freight to be shipped from door to door on easily interchangeable platforms, creating a smooth intermodal system between land and sea transport. The fundamental premise of the container was to institute an interchangeable infrastructural object that could be compatibly transferred across transport platforms. Shipping containerization envisioned the steel box as a modular node in a much larger *system* of interchangeability and flow, allowing transport to be internationalized as an "integrated process from origin to destination" (McKinsey and Co Inc., 1967, iv). The container stabilized previously unwieldy forms of interchange by becoming a calculable architecture that insulated goods from the incalculability of various forms of possible disruption, from snow and storms to damages en route. For example, the container afforded temperature-controlled shelter and protection for goods both perishable and non-perishable, maintaining the quality of products even as they travelled vast distances.

For example, Aqualife logistics, a Danish company working with the Maersk shipping line, sends weekly shipments of live lobsters straight from the waters of Halifax, Nova Scotia, to a seafood market in Urk Netherlands. Another, Pacfic American Fish, has begun importing shipments of live black rockfish, olive flounder, and turbot – 'exotic' Korean fish marketed to fine dining restaurants and seafood markets in the US – in 20-foot containers that allow the fish to swim freely during the two week trans-Pacific voyage, keeping them fresh and alive for the longest time possible before consumption (Nall 2013). The container has, in this way, enabled a "liberated spatial imagination based on calculation and performance" (LeCavelier 2016, 44): time came to be viewed as

a fixed, controllable, universal and stable unit of measurement and calculation (Elden, 2007; Zerubavel, 1981). In this way the container provided a new unit of efficient transport not only because it provided a standardized unit of delivery, but also because it could be employed simultaneously as warehouse, a refrigerator, and management technology that served to delay or accelerate the provision of goods to consumers and manufacturers as they needed it. The container thus applied logistical logics of abstraction and standardization onto a piece of built infrastructure that could translate the fantasy of smooth, continuous goods circulation into a reality.

Even delays from labor shortages could be forestalled with containerization, since containerized systems are mechanized and require a single crane operator to unload a container from a ship onto the docks. The mechanization of dock work thus reduced the uncertainty associated with older technologies of cargo shipping, which required large gangs of dockworkers to unload a ship at a time. Containerized freight technology provided an unpredictable world of transport – where disruption could take the form of labor strikes, bad weather, or accidents - with a quantifiable, predictable form of management which Craig Martin has dubbed "packaged efficiency" (2014), one that could deploy economies of scale and geometric interchangeability in the service of reducing delivery times and costs. As Deborah Cowen has argued, if the need to secure efficient trade flows is what animates the rise of logistics, then any form of disruption, regardless of their motive, becomes construed as a threat to seamless flow. In this way, "the interference that comes from 'inefficiencies' like democracy, and the actors that demand it, might themselves be construed as security threats" (Cowen 2010, 616).

The standardization of the container was thus an effort to manage flow in a way that could reduce disruptions and unpredictability. While the political implications of securing freight from disruption are addressed in chapter 2, here I seek to outline the way in which containerization was seen as a *technological* solution that 'smoothed' and 'resolved' the problems of freight distribution with the simple diffusion of a creative, reproducible technology. A more critical account, however, would note that the standardization of containers was from its inception a process tense with socio-economic frictions. The container was not unique in its effort to create international processes of standardization. As Craig Murphy (2004) has demonstrated, since the 1850s, two of the main tasks in the proliferation of organizations aimed at establishing international standards were "creating and securing markets for industrial goods" and "manag[ing] potential conflicts with organized social forces which might oppose the further extension of the industrial system" (Murphy 2004, 34). Indeed, the international standardization of the container would not have been possible without tense negotiations between the International Standards Organization (ISO), the United States government, and Sea-Land and Matson, two shipping companies that sought to have their patented container technologies adopted as the international standard. Seemingly technical matters involved international collaboration and significant friction, underscoring Colas' (2018, 155) argument that "the liberal internationalist 'common sense' of universalization and standardization was in fact a geographically uneven and politically hierarchical process." Pressure from certain states, firms, and social forces directed market forces towards particular technological solutions, whose international standardization would deliver unequal dividends across the world. Ports in many newly decolonized nations would,

soon after the adoption of the ISO container standard in 1967, have to make capital intensive adaptions to their docking technology to gain access to the economic opportunities containerized traffic provided, exacerbating the unevenness in the development trajectories of coastal nations in east Asia who had made these adaptations early, and those who did not. In this sense, the functional integration of transport systems instituted by the standardization of shipping container had pronounced political dimensions.

Regulatory impacts

The intermodal system instituted by the standardization of freight also depended on a change in the regulatory regime governing transportation (Peoples 1998; Teske, Best and Mintrom 1995). By the 1970s, as containerization began to be adopted across a variety of freight modes from ships to trucks and rail, advocates for federal regulatory reform argued that economic regulation "protected inefficient carriers, promoted high rates and fares, and in general fostered an inefficient allocation of resources" (Talley 2002, 406). A subsequent set of deregulation acts were passed, such as the Shipping Act of 1984, Railroad Revitalization and Regulatory Reform Act of 1976, the Staggers Rail Act of 1980, and the Motor Carrier Act of 1980, which eroded protections on domestic ownership. The Staggers Act, for example, permitted mergers involving end-to-end consolidations of entire companies, such as the 1995 merger of Union Pacific that acquired Southern Pacific, creating the largest US railroad to date. These consolidations have contributed to an increasing concentration of the industry. Companies were no longer prohibited from owning across transportation modes, which allowed the

development of intermodal cooperation. In particular, shipping lines began to offer integrated rail and road services to customers, driving down the cost and increasing the efficiency of transportation by offering shippers a seamless transportation system (Rodrigue and Slack 2017, chapter 3).

For example, until the early 1980s, most container cargo exported from Asia and bound for the US East Coast was shipped across the Pacific and through the Canal to an East Coast port. In 1984, however, the American shipping company American President Lines (APL) began offering "landbridge" services, which allowed ships to call at ports along the US West Coast, where containers were unloaded and put on rail cars heading east. APL acquired "double-stack" trains and contracted railroads for operation of their rail lines. This move spearheaded a shift in modal transportation toward the consolidation of firms, spurring the growth of third-party logistics companies (3PLs), and increasing the ability of large firms to control distribution channels to ensure an unimpeded circulation of containerized freight (Notteboom and Rodrigue 2009).

Crucially, these forms of deregulation and consolidation that were spurred by intermodal containerization had negative impacts on labor across transportation modes. For longshoremen, the container reshaped long-established patterns of life on the docks. "A containership," McLean Industries told shareholders after its second year of operation in 1958, "can be loaded and unloaded in almost one-sixth of the time required for a conventional cargo ship and with about one-third of the labor" (Levinson 2006: 138). Shipping lines saw the container as a labor-saving technology, and heavily invested in mechanical docking infrastructure that drastically reduced the number of longshoremen

hired per ship, by as much as 60 percent in some countries.[18] In the Port of New York / New Jersey, for example, 30,000 longshoremen were employed in 1970; by 1986 the number had declined to 7,400 dockworkers, and today the port hires a total of 3,500 dockworkers.

While containerization had a large impact on the reduction of the dockworker labor force, it is important to note that technological changes did not determine the shape of the political outcome. Dockworkers on both the East and West coasts of the United States were reluctant to accept the changes wrought by containerization, and negotiated "work preservation" schemes that protected longshore jobs and prevented the complete attrition of the labor pool. The automation of containers became a serious issue during the negotiation of International Longshore Association (ILA) contracts between 1956 and 1958. Shipping liners that had begun to employ containerized technologies asked to hire only five or six men per job, a third of the usual labor required. In November 1958, the ILA announced a boycott of all container loading jobs, culminating in a work stoppage by over 21, 000 ILA longshoremen on November 18. Over the course of the year, the ILA bargained that the spread of automation should benefit both workers and employers. It offered to eliminate one to two longshoremen from each gang, but sought a six-hour workday and a guarantee that ILA members would be given the job of loading and unloading containers, rather than ship workers. After more than a year of intense negotiations, the New York Shipping Association finally agreed to a general concept: in

[18] As Edna Bonacich and Jake Wilson show, under the break-bulk system prior to containerization, 20 dockworkers could unload 20 tons of cargo per hour. With shipping containers, 10 men or less could load and unload 400 to 500 tons per hour (Bonacich and Wilson 2008, 177).

return for the unlimited freedom to automate, employers would protect regular longshoremen incomes (Levinson 2006: 141).

On the West coast of the US, the International Longshore and Warehousing Union (ILWU) negotiated a comprehensive agreement with the Pacific Maritime Association, the main organization that represented the interests of waterfront employers (shipping lines and stevedoring companies). The Mechanization and Modernization Agreement, set in place in 1960, similarly did not resist technological advancement. Rather, while accepting that technological change was inevitable, the ILWU also fought against the threat of job loss from labor-reducing technologies. The Mechanization and Modernization Agreement allowed the introduction of mechanizing technologies in exchange for guaranteed lifetime employment for fully registered longshore workers, thirty-five hour work weeks, early retirement options for ILWU members who had worked over twenty five years, and extended benefits. (Wellman 1995, Bonacich and Wilson 178). These labor negotiations suggest that the implementation of containerization, like other logistical solutions, is a terrain of social struggle, not merely a neutral matter of technological diffusion. The actions of longshoremen, who collectively refused the loss of their work jurisdiction, reveal that the launch of this new technology was far from a frictionless process, but rather brought about numerous socio-economic frictions and tensions. In this way, we see that while standardization served to cut the complexities of commercial circulation in aspects of technological design, it could not reduce the complexities involved in its social implementation.

Military Containerization

Yet the social, political and economic tensions surrounding the container's implementation were not only restricted to the United States, even though the innovation germinated there. As a historically specific capitalist technology, the container's standardized form became useful and feasible as a technique of long-distance control only when it was put in service of US military operations. The global extension of intermodal infrastructure seemed only a distant possibility until the Vietnam War, when the shipping container became an efficient means of moving military equipment to the front. Mclean's company Sea-Land was contracted to ship war materiel and supplies to a region otherwise deeply inaccessible to U.S. troops.

By 1965, a rapid buildup of military forces and an inhospitable geographical landscape had created a logistical mess: major backlogs and port congestions had caused food shortages and a glut of military supplies, augmented by a lack of infrastructure that could support the on-time delivery of food and equipment. Sea-Land not only provided and funded the intermodal means for showcasing the container's unitized efficiency, but also demonstrated that, by stocking outbound containers returning to the U.S. with goods from Japan, high capacity containerization could be fully utilized to not only reduce costs, but also create profitability. Witnessing the container's potential allowed the army supply operations general Frank Besson to later report to Congress that containerization was not "just another means of transportation," but an object whose full benefits could "only be derived from logistic systems designed with the full use of containers in mind" (Levinson 2006: 247). Standardization facilitated the push to develop a globally coherent scale of container transport, but this history reveals that the rise of containerization is embedded within the congenital developments of military and commercial innovations.

This military connection is not only significant because it identifies the entanglements of the martial and economic. It also points to the way that military adventures were designed and enabled by an encompassing logistical vision, one that was and continues to be global in its ambition.

Although Malcolm McLean had introduced shipping containers in 1956, it was not until Sea-Land solved the logistics crisis of the Vietnam War that it demonstrated its effectiveness for international trade. Containers that shipped materiel to the frontline of war would then make a quick stopover in ports in East Asia, where, stacked with Japanese and Korean manufactured goods, they returned to the United States to prove that the container had a dual utility.[19] Experiments with a container that could be transferred across different modes and objectives of transportation thus reduced the time and labor involved in transporting military supplies to the front, and commercial goods to consumer markets in return. The US Military's use of containers to manage massive supply chains during the Vietnam War ensured thereafter that container shipping would become the primary mode of goods transportation, and, as Thomas Reifer and Marc Levinson argue, the single most important innovation in the economic globalization of the decades that followed (Reifer 2004, Levinson 2006).

As a crucial aspect of the shipping container's development, standardization does not inherently or necessarily lead to the control or coercion of people. However, because it made possible a constant and predictable delivery of sustenance and supplies to troops

[19] Jasper Bernes (2013) also notes that in a similar vein, radio frequency identification (RFID) technology was first deployed by the US military in Iraq and Afghanistan, at which point Wal-Mart began exploring its use. Shortly afterwards, the Department of Defense and Wal-Mart issued mandates to their largest suppliers, requiring them to use RFID tags on their merchandise.

on the ground, standardization paved the way for the constant provision of supplies for war making, providing militaries with a logistical system that could enable the perpetual extension of the means of battle.

As it developed through military experiments with supplying the means of war, the process of containerization was also tightly linked to a logistical conception of warfare. Long before it was a science of management, logistics was one of the arts of war (Jomini 2009; Cowen 2014). During the Napoleonic Wars, *logistique* referred to the work of deploying troops, provisions, and facilities—"men and matériel"—to the front lines. As early as the 1870s, Jomini emphasized that logistics was "greatly extended and developed in signification," and recommended expanding logistical thinking beyond merely the hows of movement to the level of strategy (Jomini 2009, 189). Later, as De Landa (1991) and Van Creveld (2004) would argue, the rise of industrial warfare generated a new concern with ensuring a constant flow of fuel to the battlefield in order to lubricate the machinery of war.

As a military term, logistics was deemed a key factor in the success or failure of military campaigns. Writing amidst the Napoleonic campaigns of the nineteenth century, Antoine-Henri Jomini articulated logistics as a specialized field of military knowledge. In *The Art of War* ([1838] 2009), Jomini realized that the Napoleonic wars presented military strategy with a qualitatively and quantitatively different problem: these wars pulled millions of soldiers into the roads, and along with the mass numbers of those fighting came the problem of their subsistence, their munitions supplies, and their transportation. Logistics became a problem of how things were to be transported, moved and produced. Arguing that logistics was not simply a science of detail, Jomini suggested

that "on the contrary" logistics should be understood as "a general science, forming one of the most essential parts of the art of war" (Ibid, 252). In this way, logistics became central to an understanding of war as not only a strategic game, but a quantitative calculation of means and ends, requiring assessments of how *long*, and how *far* wars could be fought without exhausting the supply.[20] In this way, as Martin Van Creveld argues, what wins wars is not "great strategic genius," but "plain hard work and cold calculation" (2004, 1).

If logistics provided the conceptual and managerial apparatus through which the battlefield could be imagined through the constant supply of arms, containerization can be understood as its material manifestation. Together, a logistical approach to war helped to define and expand the boundaries of the possible (Huston 1970), while containerization provided the "hardest facts of all:" the concrete network of sustenance, infrastructure, and transportation that allowed the efficient delivery of the means by which armies could live, move, and wage war (Van Creveld 2004).[21] For the French theorist Paul Virilio, the development of logistics points to what he terms the

[20] In some contrast, Carl Von Clausewitz does not see logistics as central to warfare. In a familiar formulation, Clausewitz argues that war is a "continuation of political intercourse, carried on with other means" (Clausewitz 1976, 87) and as such, provisioning is only a secondary matter. In certain situations, however, logistics becomes critical: if a state of equilibrium sets in, "subsistence is likely to become a principal concern. In that case, the quarter-master-general becomes the supreme commander." For Clausewitz then, "the conduct of war consists of organizing the wagon trains," is a qualitatively different *form* of warfare, overseen and managed by logistical operations, but largely an anomaly in the conduct of war policy. It is worth considering how this famous definition of war has shifted under the perpetual war of our times. See also (Virilio and Lotringer 2008).

[21] While I do not have the space to elaborate on this now, I will mark the way in which the provision of food is emphasized as a key aspect of maintaining soldiers' ability to fight. This aspect of provision highlights the ways in which logistics both enables and constrains the reproduction of certain lives and social formations under conditions of conflict and emergency (Attewell 2018). The three areas of logistics that Van Creveld lists - physical sustenance, the construction and maintenance of physical infrastructure, and modes of transport - point to a focus in logistics on the reproduction of *particular* lives and social formations under conditions of conflict and war, and remains silent about the lives and social formations which it must devastate in the process of sustaining war.

"vectorization" of warfare, where logistical innovations allowed militaries to stretch supply routes in both scale and magnitude. In this way, "war is no longer in its execution, but in its preparation…war which isn't acted out in repetition, but in infinite preparation" (Virilio and Lotringer 2008, 104). Virilio extends Jomini's insight about the importance of means into the context of the present, suggesting that the problem of mass troops on the battlefield represents quite well what later develops in the audio-visual representations of the field through weapons technology, in long-range artillery, in missiles, and finally in nuclear warfare, since, "in an age of deterrence, the production of arms is already war" (Virilio and Lotringer 2008, 103).

Virilio's theorization of perpetual warfare does not address the role of containerization in making the Vietnam War possible. Picking up his analysis of the logistical underpinnings of war and apply it to the era of containerization, I argue that it is possible to understand shipping containerization as one of the infrastructural technologies that manifests this conception of an 'infinite preparation' of war. Through the combined rise of military logistics and containerized delivery, calculative modes of planning came to understand warfare through a system of topological movements and temporal calculations. Logistical forms of military planning, aided by the infrastructural expansion of containerized networks, thus provided an organizational awareness of the topology of movement - organizing the provision of supplies and troops in relation to how far they are traveling, and *where* they will arrive - with the *temporality* of movement - *when* they should arrive, and how many supplies will be needed to sustain them until they get there.

The standardization of container infrastructure draws thus from a logistical imagination that, as Jesse LeCavelier (2016) argues, depicts territory topologically (33).

Rather than depicting every detail, diagrammatic representations of the complex movement of troops and supplies employ schematic and abstract flow charts that "acknowledge only the aspects of the territory that pertain to the logistical processes in question" (ibid, 34-35). As LeCavalier notes, this process is an act of topological modeling, whose result "necessarily produces a distance between the ground and those logisticians charged with managing the movement of goods over it" (ibid, 35). This act of distancing produces the logistician as grand architect. As one logistics network designer with the shipping firm Maersk remarked in an interview, for example, "the ships are like little ants. I look at the network, the flows of the ships, and my job is making sure the world moves as it is supposed to."[22] As the art of calculation has become increasingly standardized through computerized systems and predictive software, this distance between logistician and ground movements is further exacerbated, abstracting space by depicting it through a series of circulations that bracket the realities of social formations and lives on the ground.

In this sense, the operations of logistics start to shape and condition the spaces they inhabit. In both military and business contexts, logistical efforts to provide the means for perpetual war were greatly aided by the standardized precision of the container form, reconfiguring strategic approaches to warfare and placing increased priority on considerations of technology, infrastructure, speed and quantity. As some scholars have argued, the "new American way of war" now mimics post-Fordist approaches to flexible specialization and delivery, transporting logistical logics from the domestic and economic spheres into overseas military practice (e.g. Boot 2003; Boyer 2003; Steinmetz 2005). In

[22] Interview with Nils Madsen, Feb 2015.

this way, the fact that the container became 'internationalized' after the Vietnam War illustrates the way in which, as Naomi Klein (2004) has argued, colonies have often become experimental testing grounds for social experiments that would later come to be adopted in other imperial contexts.

While I have sought to illustrate the intertwined developments of military logistics and shipping containerization here, it is important to underscore that the political implications and social effects of logistical modeling and standardized containerization are not predetermined by their militaristic and technocratic origins, but are rather contingent upon how and to what ends logistical technology came to be mobilized. The rise of civilian logistics drew from a pervasive entanglement with military modes of distribution. In this sense, although the post-Vietnam war success of shipping containerization drew from the rising importance of logistics to military strategy, it is important to echo Deborah Cowen's insistence that the revolution in logistics does not mark its civilianization, but rather "a different and deepened entanglement between the just-in-time geographies of production and destruction" (Cowen 2014, 6). To understand how growth of logistics as a business science prompted experiments with the expansion of just-in-time geographies, the next section examines the twin rise of logistics and containerization, seeking to understand how these two developments buttressed each other in expanding the scale and reach of the operations of capital.

III. Logistics as a scale-making practice

The numerous standardized changes associated with the logistics revolution have thus equipped capital with a range of new tools for increasing the velocity, efficiency,

bandwidth, reliability, and agility of material flows. While the history of capitalism as a whole is marked by a general tendency to enhance the mobility of commodities, the global adoption of the container represents a sharp acceleration of that trend. Containerization was one of the primary infrastructures – enabling a diverse linkage of logistical systems from algorithmic processing to tracking systems, intermodal transport, and transoceanic movement - that sped the internationalization of production chains. As advances in logistics have helped to stave off capitalism's crisis tendencies by providing a cost-effective technology for moving commodities across international space, they have fostered the development of new geographies of production, consumption, and dispossession.

I take the term "scale-making" from the work of anthropologist Anna Tsing (2000), who uses the notion of scale-making to analyze different kinds of undertaking - such as finance capital - that operate at specific scales of the global, national or local. Scale, technically, is the representative fraction that indicates the relationship of a unit of distance on a map to a distance on earth. For Tsing, however, the term has more than cartographic applications. Scale is "the spatial dimensionality necessary for a particular kind of view:" to be perceived, as such, projects may be rendered visible in distinctive ways (2000: 31). Scale suggests the plasticity and multiplicity of socio-spatial formations, avoiding the reifying tendencies of geographical categories. One therefore comes to understand the regional, local or global as a dynamic phenomenon that only comes into focus at particular historical conjunctures. Scale-making practices therefore most often emanate from centers of power (geographically, such as multinational corporations or large states), but only achieve their power and effects as they intertwine

with and exploit local power structures and resources (2000: 33). Tsing's argument highlights the way in which globalization is not a neutral frame for viewing the world, but one that is performed through practices of configuring and calculating various scales of operation. As she explains, "a project that makes us imagine globally in order to see how it might succeed is one kind of scale-making project" (2000: 34).

Following Tsing's conception, I argue one of the most under-recognized scale-making projects of globalization is the coupling of logistics with containerization. To make this argument, I review how a historical crisis of over-accumulation in the 1950s and 60s prompted experiments with speeding the circulation of commodities, which pushed corporations to think about the spatial distribution of their commercial networks at global scales previously impossible. As a managerial logic, logistics premised the success of profit making on the scale-making practice of total cost analysis. I then discuss the application of these managerial logics onto material terrain. In doing so, I discuss how one persistent feature of these scale-making developments is the containment of people along supply chains in favor of making capital flow.

The Rise of Logistics

As I have suggested in the introduction, logistics is both a practice and a concept, and has two interlocking meanings. The first designates a school of business science that rose in the 1960s and 70s amongst researchers and corporations seeking to create managerial techniques and systems of communication that could oversee, coordinate, and control the entirety of global supply chains, from start to finish. The second, broader sense refers to the entire social, physical and technical apparatus involved in the

worldwide transport and distribution of goods, and in whose evolution this business science played a part. In this second sense I understand logistics expansively, not just as a specific industry of goods transportation, but an apparatus or assemblage of infrastructures, techniques and logics applied to the movement of commodities and the workers integral to that movement. Although first mobilized as a managerial concept, logistics required a material infrastructure for expansion, leading to the production of a networked system of containerized infrastructure. Together, these twin processes have fundamentally altered the global supply chains, but in doing so, they have also sought to manage commercial capital at such a wide scale that their attempts to comprehensively capture these circuits have resulted in numerous contradictory and conflicting effects.

Logistics first rose to prominence in business management schools and in corporate experiments with supply chain efficiency around the 1960s and 70s. At this time, traditional mass manufacturing sectors in the advanced industrialized countries declined due to a combination of factors that included intensified international competition, accelerated technological change, and market saturation (Brenner 2006, 164). During this period, capital turned to strategies of offshoring and contracting in order to optimize profits to cost ratings. Productivity began to expand in newer industrial sectors grounded in flexible production systems, as large firms mobilized three intertwined strategies to enhance efficiency, sustain value accumulation, and increase their market share. They a) expanded social divisions of labor at the inter-firm level by subcontracting key productive functions to other providers and supplier networks (Tsing 2009; Brenner 2004); b) internationalized and outsourced the supply chain by pushing low-cost production facilities to places where labor costs were cheapest (Urry 2014; Coe

and Hess 2012) and c) consolidated command and control of supply chains at major headquarters, accelerated by the assistance of cybernetic technologies for tracking and tracing, while simultaneously flexibly organizing and decentralizing their supply chains by dispersing distribution, financial and service functions across local networks (Amin and Thrift 1992, Sassen 2001).

Structurally, these shifts were prompted by a tendency toward overproduction inherent to commercial capital, theorized rigorously in Robert Brenner's *The Economics of Global Turbulence* (2006). Brenner theorizes that the arc of accumulation that reached its climax in the 1960s met with a crisis of overproduction that producers encountered in the industrialized North, leading to a falling profit rate. As competition from other industrialized countries compelled the US to increase productivity, big corporations increasingly replaced labor with more efficient machines and managerial labor processes through Taylorist and Fordist methods of production.

Theoretically speaking, while automation may allow the capitalist to gain significant productivity gains with new technology, in the long run, as the invention is increasingly adopted, prices within the system are re-set at a lower level (Brenner 2006; Dyer-Witheford 2015). This tendency for the rate of profit to fall is inherent to commodity capital, since competition impels producers to adopt the most advanced technologies that increase the productivity of labor and drive down prices. As low prices place producers under the pressure to adopt more new technology, the cycle becomes iterative. The increased ratio of machines - dead labor - to living labor, however, eventually becomes a problem as their investments become tied to the fixed capital contained in machinery. As a result, capitalists begin to experience a falling rate of profit,

and the drive to accumulation undermines itself in the need to overproduce to recoup its investments in dead labor. The downward pressure on prices made it difficult for US firms to realize their investments at previous rates of profits. In the 1970s, this resulted in "the long downturn," an extended period of declining profitability which led to "over-capacity and over-production [that] were perpetuated and exacerbated throughout the advanced capitalist world", initiating systemic turbulence from which the global economy had to find ways to recover. (Brenner 2006: 38). This crisis of profitability ushered in a twenty-year period of stagnation in the US economy. As the "mixed blessing" of fixed capital led to the slow decline of US firms' manufacturing strength, hope for profit could no longer be located in the production process. Firms in the global North began to experiment with shifting investments toward the speedier realization of value. The prolonged profit squeeze that began in the 1950s prompted corporations in the United States to search for ways to reduce the costs of operations. No longer able to generate substantial profit from the mechanized and labor-saving technologies of factory manufacturing, capitalists began to experiment with ways in which profit could be realized more quickly through the acceleration of commercial transport.

The twin rise of logistics and containerization became crucial solutions to these historical crises of profitability. Experimenting with the organization of goods circulation became a necessary 'spatial fix' to extend commodity markets on a world scale, in order to develop new zones of production and manufacture (Harvey 2001: 237-266). Beginning in the 1960s, multinational corporations began experimenting with novel approaches to the management of supply chains (W. B. Allen 1997; La Londe, Grabner, and Robeson 1970; Vahrenkamp 2010). The application of Taylorist scientific management to factory

floors had resulted in considerable gains in manufacturing productivity, but transportation and warehousing practices remained inefficient and undeveloped: the cost of distribution represented between 10 to 30% of total costs. La Londe, Grabner and Robeson suggest that by the end of World War II, distribution was "one of the last remaining frontiers for significant cost savings" (1970, 45). Impelled to overcome these conditions, firms in the United States began to experiment with rescaling and disaggregating the component parts of the production process, raising total profits by quickening turnover times and relatedly, relocating manufacturing to locations where labor costs were lowest. Focusing on distribution costs offered a response to the profitability crises associated with overproduction that began in the 1950s in the global North. Companies started to examine the complex cost interrelations among various business activities in order to optimize them as a unified system (W. B. Allen 1997; Ballou 2004; Bonacich and Wilson 2008; Bowersox 1969; Cowen 2010, 2011, 2014; La Londe, Grabner, and Robeson 1970; LeKashman and Stolle 1965; Smykay, Bowersox, and Mossman 1961).

Prior to this turning point, the term commonly used to refer to material flow was "physical distribution management," an approach that sought only to manage outbound finished goods after they had been produced at the factory. In the 1960s, however, the concept of "integrated business logistics" began to gain popularity in business management, encompassing the total material process of flow from raw materials through finished goods. An early definition in business management cast logistics as:

> "A total approach to the management of all activities involved in physically acquiring, moving and storing raw materials, in-process inventory, and finished

goods inventory from the point of origin to the point of use or consumption" (Lalonde, Grabner and Robeson 1970, 44).

The concept of integrated logistics envisioned a broadening of executive responsibility for the total flow of material from "end-to-end." Here, executive scope broadened to oversee and control functions that had previously been fragmented among separate departments, with little integration or attention from senior executives within corporations. By better coordinating and integrating the production of raw materials to finished products up and downstream of supply chains, supply chain strategists suggested that businesses could eliminate "non-value-adding activities" such as the seven classic "wastes" proposed by Shigeo Shingo: overproduction, waiting, transportation, unnecessary processing steps, stocks, motion, and defects (Shingo 1989, Hall 1997). A growing consensus in business literatures to date generally agrees that integrative supply chain strategies help firms reconfigure their resources and capabilities, leading to performance and competitive advantages (Frohlich and Westbrook 2001; Vickery et al. 2003; Huo et al. 2014). It prompted firms to regard logistics as a strategic function, on par with finance, production, and marketing. Although few qualitative case studies exist that illustrate the positive effects of logistical integration on retail firms, numerous quantitative studies in the Kenyan (Magutu et. Al. 2015), Chinese (Huo 2014) and international (Frohlich and Westbrook 2001) contexts found that there is a positive correlation between supply chain integration strategies and firm performance.

In seeking to minimize the costs of distribution, these logistical experiments involved reshaping the very concept of the corporation, and thus reorganizing economic activity. Rather than producer-driven chains acting as the primary economic agents who

establish backward linkages with component suppliers and forward linkages into distribution and retailing (Gereffi 1994), logistical models involved "finding the right combination of inventory, length of production run, level of customer service, and so forth to maximize the profit of the firm as an entity: that is, a systems approach" (1994, 110). As Deborah Cowen has traced, a systems perspective shifted the notion of physical distribution from one that was exclusively concerned with the movement of finished products, to a field that considered the total circulation of merchandise, including movement from sources of supply to the beginning of the production line (2014, 35).

Key to this systems approach was the establishment of a "total cost analysis," a calculation of firm profits that seeks to account for the actual cost of distribution *across* components, from raw materials to the final product, rather than transportation costs alone (Cowen 2014, 35). In a total cost analysis, explain industry analysts Smykay and Lalonde, "attention is focused upon the total action of a function rather than upon its individual components" (1967: 17). Logisticians recognized the extent to which modern economies depend on a high degree of connectivity between suppliers, competitors and labor markets, and translated this insight into a "value-added" proposition for firms. Positing that firms could benefit (i.e, gain revenue and/or reduce their costs) by being effectively "closer" to their workers, suppliers and customers, logisticians repackaged supply chains by imagining distance and time in terms of their intersections with total cost.

An early influential distribution study by Lewis, Culliton and Steel in 1956, for example, posited that shippers and manufacturers should evaluate their choice of transport mode (air freight, rail, shipping, etc.) on the basis of several logistics variables,

not only transport rates. The higher cost of airfreight, for example, might be offset if it produced a faster response to consumer demands, small inventories, lower warehousing costs, and less loss and damage, etc. (Lewis, Culliton and Steel 1956; Allen 1997). This often involved seemingly counterintuitive spatial manifestations that have become normalized over time. For example, LeKashman and Stolle write that the total cost approach established new criteria for deciding where warehouses would be built. Location was not to be assessed in terms of the distance of a plant or distribution facility from its destination. Rather, "the earnings of this business could be increased by supplying its customers in the Dakotas from a plant in Ohio rather than from a much nearer facility in Illinois." When total profits were calculated, this decision turned out to be an important element in the "most profitable use of the existing facilities of this company" (1965, 43). This approach enabled rapid comparisons of changing freight rates, allowed firms to model route choices, facility locations, and order quantities. The establishment of total cost accounting thus brought economic agents closer together in agglomeration economies, although not necessarily closer together in physical space.

In this way, business logistics sought to systematize the supply chain. A systems perspective gave rise to a re-scaled space of action for corporations, which began to incorporate distribution considerations as crucial factors in manufacturing processes. Firms such as Lockheed and Boeing, whose corporate identities had been firmly linked to the manufacture of airplanes and complex technology systems, began to incorporate logistical calculations into their production flow, spearheading a trend in which corporations would increasingly blur the lines between production and distribution (Davis and Brown 1974, 1). Functions that were previously handled by separate departments and

often, separate companies - from purchasing to inbound and outbound freight delivery - were gradually merged under the single frame of integrated logistics, which now shouldered the responsibility for coordinating and managing entire systems of production and distribution (Cowen 2010, 2011). The corporation gradually began to integrate numerous processes once handled by separate departments—purchasing, manufacturing, transportation, warehousing, returns—in order to maximize profits across the firm as a whole. Cowen argues that these newly configured rationalities of the distributive system thus marked a shift from "cost minimization *after production"* to profit maximization as "value added *across circulatory systems*" (Cowen 2014: 24), prompting the ascent of logistics to a central role within the restructuring of capital.

At the heart of this expansive conception of logistics is the notion that supply chains integrate supply and demand management across individual firms. One authoritative industry definition, for example, thinks of logistics as the wide array of processes that span the management of an international supply chain: "the managerial responsibility of organizing, controlling, directing, staffing, and coordinating product flow from the point of initial procurement to the point of ultimate consumption. This definition encompasses the activities of purchasing, inventory control, material handling, site determination, warehousing, packaging, order processing, and transportation in a company. It should also bridge the gap between the inbound flow of raw materials and the distribution of finished products" (Davis and Brown 1974). This understanding of the supply chain as an entity that simultaneously spans great international distance and requires deeply integrated coordination across component parts required a shift in perspective of corporate organization. In a logistical model, the firm becomes a network.

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The organizational changes underpinned by logistical integration were not uniformly applied across capitalist firms in the global North. At the same time that some firms chose to centralize operations into integrated logistics systems, others chose to decentralize, with uneven effects across companies. Larger-scale capitalist firms were able to capture greater market share by employing a variety of financial stratagems (such as takeovers, buyouts, and mergers and acquisitions with logistics and transportation companies to develop their trade capacities (Lynn, 2010). Such forms of centralization enabled some industrial capitalists to extend the scale of their operations, leading to a concentration of capital in larger-scale firms. As Marx underscores, such processes of centralization can accomplish much more quickly what would take many years of concentration through accumulation to being about (1976, 626-8). Firms such as General Electric pursued centralization. Informed by the dense inter-linkage of firms and inter-sectoral strengths of Japanese production networks, in the 1960s, such large industrial firms in the US rapidly shed their manufacturing capacities while consolidating across industrial structures. Today, for instance, the largest owner of passenger planes in the United States is not United Airlines or any other major carrier, but General Electric's aircraft leasing arm.

As Spencer Cox (2016) and Sturgeon (2002) trace, however, another tactic pursued by a significant proportion of large American corporations was to decentralize firms into a networked structure. In this approach, which Sturgeon (2002, 452) calls the "production network paradigm," large lead firms shed industrial manufacturing capacity and develop subcontracting networks through 'turn-key' producers, though maintaining key assets such as innovation, design, logistics planning, management, and skilled labor. Since 1992, for example, IBM has sought to play a merchant provider role, providing the components and technologies it previously guarded for exclusive use in its computers. The strategy is to divest non-core functions, allowing lead firms to quickly attain value from innovations (Venkatesan 1992), while leaving turnkey firms in charge of the manufacturing process. One such innovation is a logistics system: production networks could achieve economies of scale by decentralizing manufacturing capacity to turnkey suppliers, and attain "economies of speed" (Cox 2016, 12) by reducing the turnover of capital through tightly integrated just-in-time networks and logistics intermediaries.

Logistical modes of management could be applied to both centralized and decentralized production structures, but in both cases, the economist Barry Lynn (2010) argues, corporations in the US and Europe shifted strategy from directly owning manufacturing capacities to become large trading companies. Both centralization and decentralization strategies sought to move from directly producing commodities to becoming large trading companies, contributing to what David Harvey identifies as the hegemonic rise of merchant capital (Harvey, 2013). Rather than merely buying low and selling high, merchant capitalists seek to capture surplus value through the development of monopoly profits. A key outcome of the rise of logistics was that it aided in the

formation of modern business enterprises, which, as Alfred Chandler influentially traced in *The Visible Hand* (1977), focused on "linking the administration of producing units with buying and distributing units" in order to "[routinize] the transactions between units" and thereby lower transaction costs (1977, 6). In this way, modern business enterprises seized on the centrality of transport and communication and created logistical systems that could efficiently coordinate the flow of goods from one unit to another. This more effective scheduling of flows achieved, Chandler argues, "a more intensive use of facilities and personnel employed in the processes of production and distribution and so increased productivity and reduced costs" (1977, 8-12).

Logistical systems were thus integral to the rise of modern business enterprises that centered on their function as efficient trading companies. Central to this process were "precision management" models, which utilize a series of algorithmic and inventory calculations to optimize operations, eliminate actions deemed wasteful, and ensure an efficient utilization of resources. One critical doctrine in this model is just-in-time (JIT) management. Pioneered by Japanese automakers, logisticians grafted JIT logic beyond car production to the management of the whole supply chain. Just-in-time models prioritize the ability to mobilize and deliver components exactly when they are required. JIT was a model in distinct contrast to a just-in-case model where companies forecasted demand, created buffers, and held large stock inventories, leading to shelves filled with standing stock. In contrast, just-in-time used 'lean' methods that could meet demands at short notice. Lean logistical models aim to eliminate 'wasteful' production by using current rather than forecasted demand. These "kanban" systems integrated information on fluctuations in inventory capacities and markets with cybernetic data banks, increasing

the scope over which JIT could operate (Dyer-Witheford 2015: 53). Such management techniques seek to control the supply chain by 'smoothing' the interfaces between operations and keep processes flowing, so that the circulation of goods and raw materials continues in a seamless motion.

Firms that have adopted these new technologies and methods of logistics management have gained an edge over their competitors, prompting an explosion of these practices throughout the world economy. For example, when Amazon.com started its Amazon Prime shipping membership in 2005, the idea that a company would charge customers a fee of $79 a year for shipping costs alone was unheard of. At the time, Amazon Prime's main selling point was a 2-day delivery, a speed that was then "considered a luxury" in e-commerce purchasing (Greeley in Greene 2015). Using supply chain logistics and algorithmic technologies to locate individual items in warehouses, Amazon was able to ship products at a speed then unmatched by other companies. Jeff Bezos recently claimed in 2015 that the Prime service has moved from a shipping program to the "heart" of Amazon's retail strategy, growing Amazon's worldwide paid membership by 53 percent in 2014 (Greene 2015). Across the United States as a whole, transportation and logistics costs fell from about 16% of GDP in 1980 to less than 8% in 2009 (Larkin in Danyluk 2017, 8).

In these ways, logistics helped to consolidate the world market by linking into a continuous and integrated sequence the geographically dispersed elements of the production process. In optimizing the labor costs, access to raw materials, and proximity to markets through calculations of total cost, logistics ensured that supply chains could operate by subjecting global space to the needs of capital accumulation. This has

important consequences for the spatiality of capital's operations. Whereas in Taylorist-Fordist configurations, territory was primarily understood in terms of static endowments of stocks and resources, in logistical assessments, production and consumption are not territorially confined. Instead, as Veltz (1997, 79) explains, competitiveness among nations, regions and "cities proceeds less from static endowments as in classic comparative-advantage theories, than from their ability to produce new resources, not necessarily material ones." One such key 'new resource' is the efficient *configuration* of goods and services linked through the ability of supply chains to link low costs, innovation, and velocity of value-realization together.

Where and when sites of production and consumption were located next to each other depended on the relationship of total cost to the just-in-time geographies of the supply chain. On the one hand, one outcome of logistics posits that bringing economic agents closer together in space and time raises productivity above and beyond what would be expected from transportation efficiency saving alone. The importance of delivery speed and defect correction means that modern assembly plants often keep raw material and component suppliers nearby. This is typified in the mega-factories of Foxconn, the Taiwanese-owned, China-based manufacturer who makes 40% of the world's electronic goods. Its ability to monopolize the electronics market has relied in part on its capture the supply chain from end to end, where Foxconn even has contracts with mines that are located near its factories (Ngai and Chan 2012). On the other hand, it is not always the case that the component parts of production require close proximity to assembly. In numerous industry sectors, the combined effect of foreign direct investment, free trade agreements, and cybernetic communication networks enabled corporations to

increase their capacity for global sourcing, especially to areas with low labor costs. This strategy puts tremendous pressure on commercial capital to speed up the process of commodity transport, and provides the motive force for the spread of containerization. The key point of logistical innovations is to be able to stretch the supply chain according to the logics of total cost, where the absolute distance between a mine, factory, and marketplace does not matter as much as the total costs associated with wages and the movement of raw materials and finished goods between them.

In these ways, logistics begins as a science of control, but requires a mass conquest of space. The simultaneous centralization of control and decentralization of supply chain linkages brings up the question of how the state is involved the logistical organization of capital. As Brian Holmes argues, "what appears on the horizon" with the rise of logistics is "a self-shaping, or 'auto-poetic' modeling process that can integrates hundreds of millions of individuals and billions of discrete objects into a single-mobility system, where every movement is coordinated with every other in real time" (Holmes 2011, 191). Holmes expresses a key trait of logistics that is worth particular note: logistical control both demands a fine-tuned operation of micro-management, where the success of precision management relies on the minute coordination of every component of the system, *and* requires a meta-coordination of networks so expansive that they exceed the control of any singular entity within the chain. As logistics has become an increasingly ubiquitous logic for structuring supply chains, it has prompted mass developments of coordination and transportation infrastructure across urban and global spaces (see also 2016; Cowen 2014; Danyluk 2017).

Scales of Transnational Mobility

Although multinational firms still seek to shift production to low-wage areas of the global economy, in a logistics framework, labor markets are less defined by the functional specialization of production in discrete locations than by their ability to serve and augment the efficiency of the distribution network. In this sense, firms' ability to dominate the global market stem not only from practices of labor intensification and wage suppression, but also from efficiently integrating production from raw materials to final assembly through mergers, acquisitions, and strategic integrations of its downstream supply chain (Ngai and Chan 2012).

Crucial to these cost reductions was the way in which containerization afforded suppliers and manufacturers with new horizons of global mobility. By the 1970s, container shipping had become so cheap, efficient, and resilient, that corporations began to treat territorial space itself as a fungible commodity, moving industries from one cheap labor source and real estate location to another, seeking ever lower production costs in far-flung locations. The emergence of containerized technologies was vital in decoupling and relocating the sites and movements implicated in resource extraction, production, distribution, and consumption to expand profit margins. They decreased the monetary and temporal distribution costs associated with capital's tentacular mobilization and expropriation, thus opening new markets and increasing surplus accumulation rates.

While roads, navigable rivers, and centralized production facilities have long reduced the temporal constraints on circulation of commodities, it was containerization and its associated network of fossil fuel-based transportation infrastructures that accelerated the integration of supply chains on a world scale. The expansion of

infrastructural networks allowed transnational capital to spatially extend into more profitable locations of exploitation (Harvey, 1991). As industrial-scale productive metabolisms in cities skyrocketed, capitalists searched for cheaper labor conditions and new markets, "expanding geographically into new regions" (Huber, 2009; Harvey, 2001). The container in this way propelled a new set of scale-making practices that enabled an expanded geographical and temporal scale of operations for transnational capital.

Containerization thus worked as the infrastructural linkage that aided transnational corporations in the integration of their supply chains. Although transnational corporations (TNCs) certainly pre-exist containerization, the technological and organizational platform that containerization offered crucially aided TNCs in gaining greater flexibility over the supply chain. In particular, because containerization significantly reduced the costs of transport, TNCs were able to think about profit maximizing strategies in ways not severely limited by the spatial *distance* between factories, warehouses, and marketplaces. With the increased speed of maritime transit and the apparent shrinking of distance, TNCs pursued cost-saving strategies that entailed the simultaneous integration of cost components through total cost calculations, while also pursuing the decentralization of production sites to areas with lower wage costs.

because TNCs can shift their resources and operations in response to national and international levels of demand, they can adapt relatively quickly to access natural resources, raw materials, and labor markets through the hyper-mobility of their operations. As some liberal economists have argued, such an approach was taken up in the 1980s when corporations shifted their accumulation strategy from the direct

production of commodities to become essentially trading companies. These literatures show that across a growing number of sectors and industries, value production is not just transnational in its scope or geographical spread, but is organized and coordinated via global networks that link activities across firms and nations. Such transformations have been the subject of extensive study in literatures on global value chains (Gereffi et al. 2001; Kaplinsky and Morris 2003; Bair 2008; Mahutga 2012) and global production networks (Henderson et al., 2002; Coe and Leung, 2015). In the growth of such networks, complex geographies result in models of "transnational vertical integration" (Dicken 2011) in which "materials, semi-finished products, components and finished products are transported between geographically dispersed production units in a highly complex web of flows" (Dicken, 2011, 142). Transnational companies are thus prompted to outsource their operations since this drives down production costs and allows TNCs to pursue an accumulation strategy based on their ability to source suppliers form across the world.

As such, companies seeking to shift production offshore participate in a spatial expansion of the scale of production. As transnational corporations change the focus of their activities to a spatially networked structure, they prompt the decentralization of production to traditionally 'peripheral' economies, placing a growing emphasis on the movement of components, raw materials and finished products. In particular, the need to efficiently move components, spare parts, semi-finished and finished products highlights the fundamental role of the logistics involved in the distribution of all these constituent factors. Logistics creates the "links between producers and other producers who supply inputs to their production process, as well as links between producers and the final

consumer market" (Gertler, 1988, 420) placing the power of "circulation technologies" (Dicken 2011, 81) at the center of forces of globalization.

The logistics economy spatially divided labor exploitation across the world and heightened the precarity of waged labor through a multitude of highly coordinated, fast-paced, mobile, and volatile systems of accumulation, employed to 'annihilate space by time' (Harvey, 2001). As the container allowed the distribution of goods and thus the realization of value to become high in density and "geographically mobile," it aided the mass production of commodities by accelerating the speed of delivery and increasing the quantity of commodities that could be shipped across distances. As Eric Swyngedouw (2006) recognizes, however, this is not the final step in the 'realization of value':

> "Accumulation is dependent on the swiftness by which money circulates through society. Each hiccup, stagnation or interruption of circulation may unleash the infernal forces of devaluation, crisis and chaos. Society's wealth and the relationships of power on which wealth is constructed is seen as intrinsically bound up with and expressed by the 'circulation speed' of money in all its forms (capital, labor, commodities)" (2006, 31).

This exploitative transfer of goods and people across space at an accelerating clip relied on an immense corpus of logistical data, 'know-how', and computerized systems to maintain competitiveness and increase the rate of profit.

Despite comprehensive analysis of the causes and consequences of the globalization of production, literatures on the global supply chain have insufficiently examined the spatial transformations underpinning the forms of transportation that are consequential to the power of TNCs. The reliance of transnational capital on smooth circulation means that TNCs see the uninterrupted flow of commodities, people, and services as the ultimate goal of long-distance transportation. As the arteries of commodity

flow, transit is, as Carolyn Nordstrom puts it, "not just the time between two points, but a universe of meaning unto itself" (Nordstrom 200: 213).

If the offshoring of production formed the "main axis" of capitalist globalization, what is puzzling is why the transit processes from one shore to another and the mechanisms of the supply chains that coordinate their movement have garnered such little attention in studies of the complex processes we group together under the title of globalization. A vast network of shipping routes, railroads, networks, and ships enable offshoring to be an economically viable prospect in the first place. Crucial to the ability for big businesses to offshore manufacturing was the development of cheaper and more efficient modes of transport. The mass transfer of production to the Global South exacerbated a problem for the circulation of capital: it would *only* be a worthwhile investment to expand geographically and drawn from the South's labor supply if the costs of transport did not significantly detract from the total cost of production in the periphery.[23]

Since moving manufacturing across the oceans widened the geographical divide between the production of value and its realization, capitalists had to solve a *transportation* and connectivity problem: China could only become the "factory of the world" if the cost-savings that were gained through the international division of labor were not lost in moving those goods back to existing consumer markets in the global

[23] Harvey makes a similar point in Antipode 1975. While some political economists recognize the role of transportation, these literatures remain confined to transportation geography journals and do not frequently address the structural economic reasons for which the development of transportation infrastructures was necessary.

North.[24] Yet, because long-distance trade separates production and realization over a long period of time, the maritime transportation of goods presents capital with the problem of a long turnover period, in which there is a lack of continuity in the employment of capital. This is where the question of logistics becomes absolutely crucial to the expanded reproduction of capital: transportation costs had to be low enough in order for offshoring to become a viable geographical solution to crises of profitability. In order to free capital from being tied up in the physical movement of commodities, logistics seeks to not only reduce the turnover time of capital, but to reconfigure the very ways in which profit was to be calculated across the supply chain.

As Marx explains, this imperative requires a mass increase in the volume of commercial traffic, and a great reduction in the transit time of goods, leading to his oft-cited notion that the imperative to realize capital drives the power of time over space:

> "Capital by its nature drives beyond every spatial barrier. Thus the creation of the physical conditions of exchange - of the means of communication and transport - the annihilation of space by time - becomes an extraordinary necessity for it. Only insofar as the direct product can be realized in distant markets in mass quantities in proportion to reductions in the transport costs, and only insofar as at the same time the means of communication and transport themselves can yield spheres of realization for labor, driven by capital; only insofar as commercial traffic takes place in massive volume…only to that extent is the production of cheap means of communication and transport a condition for production based on capital, and promoted by it for that reason" (Marx 1973, 525).

Here, the economics of movement are tied to the ability to control and organize spatial relations as a strategy for accelerating mobility. Transportation and speed are bound up in the geographies and temporalities of circulation (Virilio 2006), most notably in

[24] On China as the factory of the world, see: Arrighi 2007; Li 2009; Ngai 2005; Lee 1998.

destroying the spatial barriers that reduce the economic outlays of transportation (Marx 1981, 379). Processes of extensive growth seek to expand the spaces subjugated by capital, occurring within what Marx calls the "world market." The world market forms the basis of Marx's analytical framework for a critique of the capitalist mode of production. The world market refers to a structural tendency inherent to capitalist growth in which capital's need to expand exceeds the borders of the state form. Indeed, Marx stresses that "the tendency to create the *world market* is directly given in the concept of capital itself," where spatial expansion is inherent to the accumulation of capital since "[e]very limit appears as a barrier to be overcome" (Marx 1973: 408).

In such a view, to fully benefit from containerization was to permit the conscious molding and manipulation of large-scale physical environments, from the dredging of seabeds to the destruction of forests. Because the container has become a hegemonic infrastructure for goods movement, as ship sizes have shot up to capture economies of scale, states increasingly consecrate coastal space to the development and expansion of ports and docks. To aid the flow of commodities brought to the shore, ports move out of cities (or vice versa) and into the outskirts. They creep across vast tracts of land, dotting the landscape with the containers and warehouses that closely resemble computer motherboards when viewed from above. Cities become defined by their ability to process and circulate goods and things. The haphazard liveliness of old ports and the economies around them have been erased, replaced by heavily securitized industrial spaces. In these ways, containerization has made demands on urban infrastructure in ways that often impact the most vulnerable populations at the fringes of the city. Such instances of

infrastructural over-expansion are, as I will argue in chapter three, a systemic feature of containerization.

The State-Capital Nexus

A major challenge that logistical expansion experiences, however, is the threat of supply chain overcapacity. In the 1967 McKinsey report mentioned earlier in this chapter, McKinsey posited that the homogenous adoption of the shipping container would pose problems once ports around the world "rush[ed] to 'get on the bandwagon.'" In seeking to remain competitive in gaining access to growing trade networks, ports around the world, whether or not their geographical position was in close proximity to the next delivery point, would all seek to make infrastructural adaptations at the same time. McKinsey predicted that this would "probably lead to substantial overexpansion" (ibid, 10). Indeed, while the total volume of global trade has increased with the rise of containerization, it has done so unevenly. Accordingly, corporations must coordinate the expansion of supply chains within the shifting landscape of global trade. For example, corporations seeking to invest in the purchase of a warehouse or factory often try to avoid regions where working class struggle is active, so as to avoid the rising labor costs associated with assertions of labor power. The administrative coordination of modern business corporations, in this way, must negotiate various political risks and socioeconomic tensions factored into the total cost calculations of the logistics revolution

To avoid fixing their investments in places and sectors that might lead to devaluation, capitalists thus often lobby the state to enact policies that promote the creation and maintenance of stable markets. States play a crucial role in laying out the

territory across which commercial capital expands. As logistics became a pervasive way to organize supply chains, capital also relied on state authority to actualize their logistical fantasies of seamless circulation. Of course, the role of the state in facilitating trade networks long precedes the logistics revolution. Colonialism was itself a project to establish a constellation of networks that could provide the concrete conditions for experimenting with ways of organizing social production for profit (Pommeranz, 2000). While logistics was not in itself responsible for the advent of neoliberal, globalized capitalism, it nevertheless plays a crucial role in extending earlier extractive networks through the systematic reproduction of capitalist social forms. The vast network of transportation infrastructure brought about through the coupling of logistics and containerization also had to be supported by spaces of juridical exception such as special economic zones where capital could circulate without restrictive state regulation. In this regard, logistics' need for a smooth space of circulation illustrates the crucial role that states play in the expansion of capital accumulation: states have to invest and intervene heavily in the spatial order, not only securing channels of trade, but also reorganizing national economies into transnational systems that "stretch the factory across national borders and even around the world" (Cowen 2014: 103).

As the logistics revolution expanded through containerized networks, states played a key role in pursuing top-down political strategies of standardization and fragmentation, integrating policy frameworks, and creating institutionalized frameworks that could facilitate flexible accumulation regimes. As competitiveness amongst regions, cities and nations became increasingly dependent on their ability to facilitate logistical circulation, states competed to gain an edge by creating zones of exclusion that can

facilitate export and import processing without the heavy burdens of surveillance and taxation. As Deborah Cowen argues, the rise of logistics facilitates a shift of the state's role in classical liberalism - "tethered to the security of national and individual property" - to the neoliberal state that shapes markets in accordance to universalizing principles of competition (2014: 61).

Likewise, Keller Easterling (2016) and Alejandro Colás (2018) have argued that the task of government in an age of logistics is to respond to capital's demands for place-specific regulatory, institutional, and infrastructural arrangements that enlarge capital's space of operation. One chief strategy has been the development of special economic zones (SEZs), which proliferated exponentially in the same era that shipping containerization became a universal freight technology (Colas 2018, 157). The zone may not be a new phenomenon. As Xiangming Chen (1995) has identified, the zone had early manifestations in late medieval free ports and colonial entrêpots, and later in the Export Processing Zones of the 1970s and 80s. Today, however, SEZs are not merely trading stations or mercantile outposts, but cross-national trade belts and corridors, encompassing the geographies of manufacturing, processing and services. These zones require a legal structure that suspends national laws and regulations in specifically demarcated zones, relying on foreign capital incentivization, minimal taxation, and labor law relaxation, among others. They also require the construction of capital-intensive physical infrastructures of railways, hubs, and port systems crucial to the universal system of freight containerization. In these ways, the state plays a major role in overseeing the construction and regulation of the legal and physical infrastructure of logistical systems. In so doing, they capture some flows in order to facilitate economic ones, constructing an

eminently neoliberal polity, where a hybrid space of "variegated" or "graduated" sovereignty is characterized by a "logic of exception [that] fragments human territoriality in the interests of forging specific, variable, and continent connections to global circuits" (Ong 2006, 19). Thus, by creating spaces of "extrastatecraft" (Easterling 2016), states facilitate smooth circulation by instituting juridical and physical spaces of exception.

These zones aim at enhancing market competition by finding an optimized balance between the deregulation of labor laws and re-regulation of national transport industries, generating forms of extrastatecraft that allow supply chains to flourish and expand. The 1966 creation of the United Nations Industrial Development Organization (UNIDO) marked an acceleration in this trend. UNIDO created a Free Zone Unit, which worked in cooperation with the World Bank and the Shannon Free Airport Development Company in Kaohsiung, Taiwan, to create models for potential zone developers. The unit held seminars on SEZ and Export Processing Zone (EPZ) formation around the world, promoting the zone as a tool that developing countries could use to enter the global marketplace and attract foreign investment through a cocktail of tax cuts and cheap labor.

Significantly, domestic governing bodies do not administer many of these zones, but their construction and management is often outsourced to global corporations that enjoy quasi-diplomatic immunities. Infrastructure specialist corporations such as Mitsubishi, Siemens, and Bouygues deliver the technologies and infrastructure construction for the high speed rails, automated cranes, and skyscrapers that rise around these zones, while port conglomerates such as the Port of Singapore Authority (PSA), Hutchison Port Holdings, and Schiphol Group bid to provide the transshipment, warehousing, docking technologies, materials-handling software and expertise, and

tracking software that allow these zones to process the movement of shipping containers and ships that come in and out of these zones. As a mere sampling, China Merchants Ports Holding has built free trade zones in Abu Dhabi, Lithuania, and Brazil, Dubai's DP world runs 77 ports in 40 countries, and Singapore's PSA operates terminals in 15 countries. The cooperation of international organizations, states, and global corporations in promoting the global extension of logistical spaces thus suggests that the rise of logistics as a system of organization was not just a process of business innovation, but was fundamentally assisted by emergent political strategies that positioned national and subnational economic spaces within supranational circuits of accumulation.

The logistical character of the state's management of space is usefully illuminated by Henri Lefebvre's ([1980] 2009) conception of a qualitatively different formation of state power known as the "state mode of production." The state mode of production (SMP) emerged as states produced institutional realignments for the construction, maintenance and reproduction of the political, economic and territorial conditions for capital accumulation over the twentieth century. For Lefebvre, the state mode of production governs the relation between abstract and concrete relations of material exchange, from the immediately concrete (production, raw materials, labor, etc.) to the abstract mediation of exchange value, including concrete forms of infrastructure that spatially accommodate the movement of commodities (2009, 107). Since capital accumulation must be defined in space, states take on the task of mobilizing space as a productive force through investments in spatial planning, infrastructural investment, land-use policies, and industrial policy that contribute to the productive capacities of locally operating firms. Lefebvre argues that "only the state is capable of taking charge of the

management of space 'on a grand scale,'" because it is only the state that "has at its disposal the appropriate resources, techniques, and 'conceptual' capacity" to take charge of growth in this way (2003: 90). These forms of management, Lefebvre stresses, require making temporal and spatial equivalences across the world market, homogenizing space in order to service the needs of capital accumulation.[25]

To illustrate the abstracting spatial tendencies of the state mode of production, it is useful to return to the special economic zone. As Keller Easterling argues, special economic zones differ from colonial free ports and their reliance on geographically strategic locations, in that they have acquired a "more thoroughly abstracted and formulaic instrument now distinct from the maritime spaces that had previously shaped trade" (2016, 31). Today, the location of maritime ports is determined less by strategic geographic location (as was the case in the establishment of the ports of Singapore, Malta, and other colonial entrêpots at key points in colonial trade routes) than by the spatial capacity and geologic properties of an area that can be dredged, terraformed, and shaped to accommodate deep water ports and the larger megaships that are becoming commonplace along major shipping routes. For example, the busiest port in the world is the Port of Ningbo-Zhoushan, which handled 888.96 million tons of cargo in 2016. Ningbo-Zhoushan is 400 kilometers (249 miles) from the major commercial and retail destination of Shanghai, a transport distance that would have been prohibitive for just-in-

[25] I choose to employ the lens of the state mode of production, as opposed to the more common usage of the "state-capital nexus" (Apeldoorn, Graaf, and Overbeek 2012) because the state mode of production focuses more heavily on the specifically spatial and geographical attributes of the relationship between the state and capital. While Apeldoorn et al's definition of the state-capital nexus similarly seeks to understand "the complex and multifaceted internal relationship between capital and the state in the global capitalist system" (2012, 468), their analysis focuses on the state's role in constructing and maintaining markets, but underemphasizes the coercive forces that a distinctly geographical reading of this relationship allows.

time delivery two decades ago. As ships grow larger to capture economies of scale, however, considerations of geographical location become subordinate to assessments of the port's docking capacity, where the chief consideration is that ports have enough space and equipment to unload and berth megaships in a timely manner. To overcome the spatial distance between Shanghai and Ningbo, which possessed these spatial qualities, the Chinese state built a $1.5billion, 448 m (1470 feet) long trans-oceanic bridge, connecting Ningbo and Shanghai across a bay and cutting the travel time between them from four to two hours.

This example illustrates Lefebvre's contention that the state mode of production produces a "violence intrinsic to abstraction" (1991, 289). For Lefebvre, the modern state, increasingly "armed with the instrument of logistical space," reproduces a logic of abstraction aimed at producing a "homogeneous, logistical, optico-geometrical, quantitative space" (238) in order to maintain active control over the conditions of circulation. In this reading, logistical rationalities are premised on a drive to render space "equivalent, exchangeable, interchangeable" (233) so as to create optimal conditions for the reproduction of capitalist production relations.

Because the state mode of production simultaneously abstracts and fragments space, however, there is variation in the rhythm and course of capitalist development across particular state forms. As the world system of states unifies and homogenizes the states' bureaucratic form, states are also differentiated on the basis of their ability to create and reproduce the relations of production by optimizing logistics and transport outputs. The sprawling reach of supply chains have undergirded a culture of consumerism in the Global North, instrumental in fostering consent to the existing social

order. In the Global South, similar development projects to create infrastructures for accelerated supply chains have facilitated the growth of consumer cultures that tend to support regimes quiescent to U.S.-led global capitalism, while fueling the production and circulation of cheap consumer goods essential to the reproduction of capital. As Lefebvre argues, spaces become simultaneously homogenized and fragmented: the physical distribution of commodities rely on containerized intermodal systems that create the smooth transition of shipping containers from ship to yard to rail and truck, and are premised on their modular reproduction on a world scale. The worldwide extension of container infrastructure is thus a key example of how logistical infrastructures, "reproduced on a worldwide scale," homogenize disparate spaces based on "systems of equivalence" that optimize the spread of supply chains (2009, 213).

At the same time, as the state mode of production implements spatial strategies for accumulation on a worldwide scale, space is also fragmented and hierarchized, "produced by the forces and relations of production and property, but also a political product… of administrative and repressive controls, of relations of domination and high-level state strategies" (Lefebvre 2009, 214). The rise of logistics exacerbates uneven development in which capital accumulation thrives on the distinction between the "strong points of space" - centers of power, wealth, material and informational exchange, etc. - and its weak points or peripheries, in which the domination of the center "exercises its control at all (organizational, administrative, juridical, fiscal, police, etc.) points of view over peripheries that are both dominated and broken apart" (Lefebvre 2009, 215). Underdeveloped nations and urban spaces have begun to compete on the basis of spatial planning that optimizes logistics and transport outputs, sacrificing democratic principles

or the internal welfare of its people in order to prioritize logistical flows. The consumer cultures that these logistical infrastructures enable are an important mechanism for fostering popular consent, but they simultaneously impel the universal alienation endemic to the capitalist system.

The emergence of containerization and logistics are thus tied to and rely on a nexus of state and corporate efforts to expand the circulation of commercial capital. In seeking to occupy space in the name of economic growth, containerized logistics enabled the globalization of manufacturing by creating an infrastructure and system that would allow corporations to expand the geographical frontiers of the accumulation process.

IV. A Theory of Circulation

Although thus far I have reviewed the development of containerization and logistics in terms of their specific empirical developments, I seek now to situate these developments within a general theory of capital circulation. As I have discussed in the introduction, the larger objective of this dissertation is to root the polysemous and often abstract term "circulation" in a materialist analysis of the slow, difficult, and complex task of coordinating goods movement across the global supply chain. Yet, it is not enough to simply describe the social and political consequences of these expansions through ethnographic or historical detail. Instead, the point of explaining the social and political outcomes of containerization and logistics is ultimately to understand how these logics of standardization and scale making are ultimately determined by the logic of capital accumulation.

Indeed, as Erik Olin Wright (1985) explains, one of the central epistemological premises of Marxist theory is the distinction between the "level of appearances" on one hand and the "underlying social reality which produces those appearances" on the other (11). As Wright explains, however, the point of this distinction is not to dismiss appearances, but rather to provide a basis of their explanation. As such "the vast array of empirical phenomena immediately observable in social life can only be explained if we analyze the social reality hidden behind those appearances" (ibid, 12). I follow this methodological proposition by Wright in seeking to explain how the empirical development of logistics and containerization covered thus far must be contextualized within a general theory of capital accumulation. Thus in this section, I examine how Marx treats the concept of "circulation" in *Capital* Volume II (1978) in order to set the groundwork for thinking of circulation as a specific mode of accumulation in which logistics plays a key role, developing an infrastructural system of containerization that would become integral to the expansion of the global economy.

An analysis of circulation, I argue, fosters a richer appreciation for the materiality of global economic restructuring.[26] Circulation, specifically, is the sphere of economic activity in which the circuit of capital is completed as the value of commodities is realized through their sale on the market. In this process, the intensification of processes of capital circulation necessitates particular ordering of space and time, requiring that we situate the rise of logistics and containerization as extensions of the logic of capital, whose systemic feature is to seek an expanded reproduction of the means of production.

[26] Such a project might seem painfully obvious to political geographers who have long engaged in this work. However, the field of international relations has gradually moved away from Marxian political economy, and from a focus on historical materialist analyses of globalization as a result.

In reading the development of logistics and containerization within a Marxian understanding of circulation, I seek to show how circulation as a mode of accumulation requires the development of fixed infrastructural systems that, in the process of treating space as abstract logistical space for the movement of commodities, produces consequences that result in the containment and vulnerability of the ordinary people who live and work along supply chains.

I foreground an analysis of capitalist circulation because the logic of capital in expanded reproduction requires it, and because processes of global economic integration have not only occurred through shifts in the processes and patterns of *production*. Global economic integration also presses toward set of radical transformations in the transportation systems that mediate the movements between factories and markets. Circulation is the process that oversees the totality of this circuit from production to exchange and realization, and therefore must be more clearly explicated as playing a key role in the expanded reproduction of capitalist accumulation. As such, this section's aim is to foreground circulation as a political economic framework. In doing so, I join other scholars in seeking to shift the emphasis of globalization studies from abstract and instantaneous financial transactions and digital transmissions to the slow, bulky, and material flows of goods and commodities that sustain human populations, fuel urban growth, and structure the uneven conditions of everyday life. In the "information age," the concrete movement of goods through infrastructural networks undergirds processes that have typically been understood through the abstract language of 'globalization'. Paying particular attention to the materiality of circulation cultivates an awareness of the frictions and obstacles that occur en route to a commodity's delivery. The material and

political impacts of intensifying global circulation reveal multiple ways in which the growing efforts of states and corporations to secure against disturbances to the supply chain have produced historical contingencies that create contact zones of difference that are both productive for, and yet simultaneously interrupt the smooth operation of global logistical power.

Marx himself refers to circulation in a variety of often-confusing guises. Circulation can denote the flows of material and resources that move around in any mode of production (Marx 1976, 31; 1979 108). It can also denote the sphere of exchange, in which the facade of a free and equal exchange of money for commodities on the marketplace is the fundamental source of exploitation, creating an equivalence between labor and labor power that allows the latter to be sold at its value, while the former creates the surplus (Marx 1976, Ch. 6). Third, circulation can point the distinction between fixed and circulating capital. Fixed capital refers to capital whose value is concretely 'arrested' or fixed in machinery and other material means of production that enable the commodity to be produced, but do not enter into the consumption of the commodity itself. In contrast, circulating capital refers to all other parts of the production process where value is constantly in circulation as it is created by labor, transferred to the product, and circulates as a part of the commodity-supply (Marx 1978, chapter 8). Fourth and finally, circulation can mean "the circulation of capital" in general, the totality of the process of production, exchange, and consumption in which capital takes on different guises as it travels through the market. For the purposes of this exposition, the third and fourth notions of circulation will be subject to examination: in order to understand the importance of the circulation of capital in general (the fourth sense), I examine how

efforts to keep value circulating (in the third sense) actually encounters contradictory tensions as investments in the means of production necessarily keep capital fixed in place.

In the Marxian canon, a clear distinction is frequently drawn between the sphere of production, from which surplus value originates, and the sphere of exchange, in which commodities are bought and sold on the marketplace and finance is organized. Circulation is a process distinct from production, one that increases value not by extraction but by acceleration. Rather than siphoning value from labor power into commodities, as in the process of production, circulation speeds commodities through the process of exchange, increasing capital's turnover, the rate at which capital changes from commodity into money and then back into the labor commodities that creates yet more commodities.

In Volume II of *Capital,* Marx notes the crucial role of circulation in the realization of value and surplus value. If, as he insists in the *Grundrisse*, capital can only be understood as a "unity of production and realization" (1973, 407) in Volume II Marx insists that commodities must circulate and their value realized on the market, before the amount of social labor expended in their production can be realized through the sale. If a commodity is not sold on the market, Marx theorizes, then its value is not *realized* through exchange, and the labor embodied in its production has no exchange value at all, although it retains its use value. The circuit of capital has to be completed through the sale and purchase of the commodity in order for labor to be recognized as the creation of value as such. It is in this sense that obstacles encountered en route to the realization of capital become of chief concern to the capitalist: if a commodity's value is not realized,

the potential surplus value that is embodied in the product remains in stasis, making it difficult for the capitalist to reinvest in the process of production.

Despite the centrality of the sphere of circulation to the reproduction of capitalist relations, the implications of the circulation of capital are often ignored in Marxist accounts of historical change. This neglect of the function of circulation can be attributed to the fact that while much attention has been paid to Volume I of *Capital,* Marxian scholars have tended to ignore Volume II. In Volume I, Marx devoted his attention to the processes and dynamics of the production of value and surplus value; to do so, he laid aside any of the difficulties that might arise out of the conditions of their *realization:* "It was therefore assumed both that the capitalist sells the product at its value and that he finds in the circulation sphere the material means of production that he needs to begin the process anew or to continue without a break" (1978: 428-429). This required the assumption that a market already exists to purchase all commodities that are produced, and that all commodities can thus be sold at their value.

In the much less frequently consulted Volume II, the assumptions switch places. If the subject of Volume I was "A Critical Analysis of Capitalist Production," in Volume II the subject is "The Process of Circulation of Capital." Having assumed that no problems are encountered in the realm of the *production* of surplus value, Marx now turns to examine what, in actuality, is an often fraught and unstable process of the *realization* of surplus value as commodities seek to be sold on the market. As such, if we take the "unity of production and realization" to constitute the totality of capitalist relations, then the frequent neglect of Volume II, and thus of processes of circulation, gives us as David Harvey points out, "only half of the story of Marx's understanding of

capital's political economy" (ibid). To look at the circulation of capital, and all the obstacles that lie on the path toward capital's realization, thus affords us a different window onto the relations and activities that are so crucial to capital's functioning.

In turning to the *motion* of capital and its need to ensure the continued circulation of money, commodities, and productive labor, we shall begin to see how circulation becomes crucial for capital's efforts to reproduce the class-labor relation. As Marx highlights, the physical conditions of circulation and exchange play a central role in ensuring the continued reproduction of capital relations. Once commodities are produced at the site of production, they enter the sphere of circulation, where any difficulties arising from the conditions of their realization arrest the motion of capital, constituting not only problems arising from the failure to realize the surplus value of *individual* commodities in the marketplace, but throwing into crisis the "continuing renewal through capital circulation of the powers of domination of capital over social labor" (Harvey 2013: 2).

This is a key contradiction contained in the treatment of the "value form," as Marx terms it at in Volume I of *Capital*. Capitalist production is impossible without the extraction of surplus value from labor whose character is fundamentally *social* - in other words, the labor not of the individual alone but of a mass number that constitutes a workforce and cooperates in the production of commodities. However, since production under the capitalist mode is based on the *private* appropriation of wealth, the social character of labor is not immediately recognized as social, since the exchange of wages takes place as a private relationship between worker and owner. In this sense, the social character of the labor relation can only be realized in the sale of the commodity: it is only

after entering this sphere of circulation, and only upon realizing the value of the commodity, that the capitalist gains his profits, and thereby appropriates a portion of the total surplus-value created by workers in his employ. This is why, although Marxists have tended to attach far less importance to the latter, the study of capital in general - of the totality of capitalist relations - requires critical analysis of both the process of production and the process of circulation.

However, the implications of the sphere of circulation move beyond simple commodity circulation. Marx explains that the circulation and reproduction of individual capital must be understood in the context of "the totality of movements of these autonomous fractions" (1978, 427). If we look beyond the metamorphosis of the individual commodity to the total circuit of social capital, we see that much more is at stake:

> "The circuit of capital, in fact, itself comprises the circulation of surplus-value, in as much as this forms part of the commodity capital, and it similarly includes the transformation of variable capital into labor-power…the circuits of individual capitalists are interlinked, they presuppose one another and condition one another, and it is precisely by being interlinked in this way that they constitute the movement of the total social capital" (1978, 428-9).

Here, in the last third of Volume II, Marx introduces the concept of the reproduction and circulation ('turnover') of the total social capital. As he explains, since the circulation and reproduction of each individual capital is part of a more general movement of circulation and reproduction, attention to the circulation of the total social capital brings up the prospect that capitalist production is always production for the purposes of profit. This tendency towards the accretion of value is what Marx terms the accumulation of capital. In order for capitalist owners to grow their wealth, and in order for economic growth to

occur, part of the surplus value must be expended productively by re-inserting it into the production and *expanding* the capacity for production.

This productive expenditure must be spent on capital that allows the current means of production to produce additional means of production for the making of consumer goods; in other words, putting money into buying more equipment, more sophisticated machinery, or to hire a larger workforce that can increase the capitalist's ability to accumulate capital. This productive spending is what Marx terms "expanded reproduction", or "reproduction of the means of production," by which the capacity to produce increases the turnover of capital. In a purely capitalist mode of production, Marx surmises that capitalist's survival in the face of competition with other capitalists is necessarily premised on the further creation and consolidation of ever-greater surplus value, and the ever-increasing wealth of the capitalist class. Marx provides an overview of this drive in the *Grundrisse*:

> "The creation by capital of absolute surplus value… is conditional upon an expansion, specifically a constant expansion, of the sphere of circulation… a precondition of production based on capital is therefore the *production of a constantly widening sphere of circulation*. Hence just as capital has the tendency on one side to create ever more surplus labor, so it has the complementary tendency to create more points of exchange" (1973, 407-410).

Expanded reproduction thus refers to the process by which the turnover of capital is afforded a larger and larger scale of productive operations. In order for the capitalist system to be sustained, then, it must expand the productive capacity of capital and renew the conditions for further accumulation. The need for capital to circulate thus underscores a key insight that Marx constantly emphasizes in his writing: Capital is not a thing or a

set of institutions, but a relational *process* of circulation between production and realization.

As some Marxist theorists posit, however, one of the key contradictions of the necessity for expanded reproduction is that capitalists tend to pursue accumulation for accumulation's sake: that is, they tend to expand the mass and total value of commodities on the market at the same time as they try to maximize their profits by keeping wages down. This, however, in turn restricts the purchasing power of the masses (Harvey 2007, 239). By paying labor as little as is socially necessary, capitalists thus produce a contradiction: since they need their goods to be bought on the market in order for value to be re-circulated into the production process, keeping wages repressed means that workers are less able to buy the very goods upon whose consumption the capitalist depends. This elicits a crisis by way of a lack of aggregate effective demand, where a mass of commodities is placed on the market, with no purchasers in sight. In order for capitalism to be sustained as a system, then, conditions for renewed accumulation must be found, so that the reproduction of capital can continue apace over the long run.

The imperative for capital to reproduce its own relations of production mean thus that turnover time becomes a crucial factor in its renewal. Marx argues that since, "(f)or the whole period of its journey to the market, capital is confined to the state of commodity capital," where it cannot transition to the money form and thus also into productive capital, it strives reduce turnover times (1978, 327). As David Harvey traces in *Spaces of Capital* (2001), the circulation of capital in this sense concerns both the physical act of circulation, concerning the actual material movement of commodities from the point of production to the point of consumption, and the costs of circulation,

concerned with the chain of merchant capital necessary in order for the produced commodity to find its purchaser on the market. Taken together, accelerating the circulation of capital requires developing quicker and cheaper means of transportation on a large scale, where transportation becomes enfolded *into* the production process and becomes part of production itself. In Volume II of Capital, Marx explains how significant transportation is to the productive realm of capital:

> "The capitalist mode of production reduces the transport costs for the individual commodity by developing the means of transport and communication, as well as by concentrating transport - i.e. by increasing its scale. It increases the part of social labor, both living and objectified, that is spent on commodity transport, first by transforming the great majority of all products into commodities, and then by replacing local by distant markets. The 'circulating' of commodities, i.e. their actual course in space, can be resolved into the transport of commodities. The transport industry forms on the one hand an independent branch of production, and hence a particular sphere for the investment of productive capital. On the other hand it is distinguished by its appearance as the continuation of a production process *within* the circulation process and *for* the circulation process" (Marx 1978, 228-229).

In this understanding, we see how Marx aligns the notion of transportation and the space of distribution with the term *circulation*. He has argued that production represents the initial trajectory of the commodity, consumption its conclusion, with distribution and exchange the midpoint in this relationship (Marx 1973, 89). The key factor that brings these three spheres together is the *movement* between their interlinked phases, and this is what circulation is.

By emphasizing that the circulation of commodities, that is, their "actual course in space" can be resolved by the transport industry, Marx situates the mode of circulation in two senses: both as the turnover of money and realization of capital (1993, 186) which

allows for the "investment of productive capital," and more significantly for the chapters to come, with the transportation of goods that appears as the "continuation of the production process *within* the circulation process and *for* the circulation process" (1978: 229). Positioned in this way, while transportation may not be directly associated with the process of production, modes of transport are essential to the continuity of production, since they transform products into commodities by bringing them on the market. Physical transportation thus becomes the one sector in which Marx insists that capital is actually *productive* of surplus value: in selling a "change of location," transportation does not only seek to reduce the *faux frais* - the incidental overhead costs which detract from total surplus value - of production, but actually becomes a "branch" of production itself. Since a change in location closes the circuit of capital through the sale of the commodity, it plays a crucial role in capital's ability to reinvest surplus value into the production process, beginning the cycle of accumulation over again.

As such, Marx is prompted to note that in selling this change in location, transportation becomes *directly* productive of value, since "economically considered, the spatial condition, the bringing of the product to market, belongs to the production process itself. The product is really finished only when it is on the market (Marx 1973, 533-4). With this in mind, the capitalist mode of production promotes the production of cheap and rapid forms of communication and transportation so that "the direct product can be realized in distant markets in mass quantities" at the same time as "new spheres of realization for labor, driven by capital" can be opened up (Harvey 2001, 245).

In this way, when merchant capital operates in the context of a capitalist mode of production, it develops specific strategies around capturing surplus value. Logistics

became an important answer to the challenges of quickening the circulation of capital. It did not only do so by accelerating the means of transport, but by reorganizing the transnational distribution networks that allowed distant markets to replace local ones. While economic geographers and sociologists such as Edna Bonacich and Jake Wilson (2008) and Thomas Reifer (2004) have addressed the role of transportation in the circulation of capital, logistics brings transportation to new heights by developing strategies around reorganizing profit around transnational *networks* of supply chains.

This driver to expand the networks and scales of infrastructure in order to facilitate circulation has been extensively taken up by the Marxist geographer David Harvey. For Harvey, in the process of circulation, flows of capital must move through circuits of space-building investment. Because built environments are central to the movement of capital, physical infrastructure "expresses the power of dead labor over living labor and as such it imprisons and inhibits the accumulation process within a set of specific physical constraints" (Harvey 1978: 124). Harvey elaborates:

> "Capital represents itself in the form of a physical landscape created in its own image, created as use values to enhance the progressive accumulation of capital…Capitalist development has therefore to negotiate a knife-edge path between preserving the exchange values of past capital investments in the built environment and destroying the value of these investments in order to open up fresh room for accumulation. Under capitalism there is then a perpetual struggle in which capital build a physical landscape appropriate to its own condition at a particular moment in time, only to have to destroy it, usually in the course of crises, at a subsequent point in time. The temporal and geographical ebb and flow of investment in the built environment can be understood only in terms of such a process" (Harvey 1978: 124).

Here, the built environments that service logistics' power are specified as part of the restless geographical landscape of capital. In order to facilitate fast flows and logistical

circulation, built environments from the Alameda Corridor to the enlarging of port yards and movement of warehouses are specified as part of a complex and contradiction-filled societal spatialization that simultaneously enhances and inhibits, provides new room and imprisons, offers new solutions but soon beckons to be replaced or destroyed by newer forms of fixed capital.

We can see how the physical infrastructure of capital's development operates in the context of cargo movement. Emerging logistics hubs like Singapore, Yan Tian, and Taipei have pursued sweeping infrastructure programs in hopes of consolidating their positions as global goods-movement hubs (Sigler, 2013). The expansion of port cities in such hubs is the subject of chapter three. In order to accommodate the next generation of ultra-large container vessels, national governments are investing billions in highways, airports, and seaports in a bid to leverage the benefits of the enlarged waterway. In an analysis that resonates with Tsing's, David Harvey refers such acts of spatial expansion through an analysis of scale: "A hierarchy of scales (often depicted as local, regional, national and global, though these are arbitrary designations in themselves) exists through which the circulation of capital works at the same time as it produces its own distinctive scales of organization" (Harvey 2006, 80).

Scale-making, in other words, is a political practice of calculating and organizing the optimal conditions for capital to flow through different components of the supply chain network, as unhindered and accelerated as possible. Yet, as the concept of the spatial fix suggests, the scale-making practices of containerized logistics fixes certain objects and infrastructure in place while aiding the flow of others. We can thus argue that while this chapter has shown how the logistics of containerization has produced new

possibilities for mobility, it has also required forms of containment as its condition of possibility. As such, the political-economic processes of globalization, of which containerization was a crucial part, can be viewed as a modality of power that strives for an optimal balance between the *internment* and *circulation* of nonhuman flows as well as human bodies that are placed in relation to systems of circulation. Both are crucial for the production of "value" under capitalism. In this way, as a force of abstraction that standardizes diverse social relations into a modular mode of transportation, containerization not only describes the physical infrastructure of global distribution but also the entire apparatus of supply chain movement by which states and corporations aid the accelerate and increased mobility of trade by intensifying processes of *circulation through containment*.

Conclusion

In this chapter I have to sought to argue that scholarly understandings of circulation must move from employing it as catch-all term for the movement of things and ideas, to a theory of circulation as a mode of accumulation that simultaneously fixes and contains people and things while aiding the mobility of others. The politics of circulation are at the forefront of a number of threads of international relations scholarship today (e.g. Castells 2000; Epstein 2005; Sheller and Urry 2006; Harvey 1990; Sassen 2001; Smith 1984, 2008).[27] On the whole, however, bodies of literature that employ circulation as a lens for global movements tend to focus on either seemingly

[27] Circulation is often employed loosely to refer to material, informational, cultural and ideological flows and the resulting forms of government that emerge in response to intensified movement across borders and boundaries. Although it is frequently employed in literatures on globalization, in recent years it has especially enjoyed renewed usage in mobility studies, an interdisciplinary study of the "radically under valorized role of movement and circulation in everyday life" (see Sheller and Urry 2006, Salter 2013).

immaterial and abstract forms of circulation such as on electronic flows of information or finance capital. There is little sustained development of what circulation actually means, and the term is frequently employed as a general metaphor to denote a diverse set of practices of movement and mobility. Because of this, its material functioning as a specific mode of accumulation under late capitalism has been obscured. Indeed, except for niche fields such as transportation geography, scholars interested in globalization have rarely sought to examine the challenges of *physically* moving vast quantities of goods and materials through space. Even in the work of critical theorists and Marxist political economists, for example, the focus has been on the shifting social and spatial relations occurring under transformations to the *production* process, while the sphere of circulation is largely left out of the analysis.[28] Yet, as I have sought to show, a theory of circulation is absolutely crucial to understanding the total circuit of capital because it underscores capital's need to be mobile in a variety of forms, while fixing and containing other forms in space. Capital's systemic need to expand its circuits of reproduction thus results in an often conflictual and contradictory relationship between fixed forms and mobile flows.

Admittedly, in this chapter I have only theoretically argued how capital circulation is a system of accumulation that mobilizes strategic flows while arresting the movement of others. However, as I have tried to illustrate, charting the logics of a general

[28] With the exception of David Harvey and political geographers interested in his concept of the "spatial fix," even studies of global capital tend to focus on either offshoring and inter-firm competition, as seen in the literature on commodity chains, or on specific transformations to sites of production as indices of the larger systemic features of global capital. While these approaches have been critical for illustrating the wider systemic problems of global capital, analyses that center the sphere of circulation are largely missing. For a good example of the literature on commodity chains, see Gereffi and Korzeniewicz 1994; Bair 2009; and Werner 2015.

theory of circulation helps to explain not just what the social and political consequences of logistics' rise are, but why they rely on particular forms of unequal development inherent to the logic of capital. This fundamental insight tracks through the empirical and ethnographic work that follows in the next three chapters, where I illustrate how forms of containment are produced in and through the exacerbation of various patterns of logistical expansion. Chapter 2 analyzes the tensions between human immobility and goods mobility through an analysis of container security policy at the ports of Los Angeles and Long Beach. Chapter 3 illustrates the particular forms of infrastructural containment that result from the over-expansion of containerized infrastructure. Finally, chapter 4 is an ethnographic analysis of how forms of containment are mobilized in the extraction of labor on board a container ship, where seaborne circulatory regimes rely to a considerable extent on a rigidly racialized hierarchy in the maritime labor market.

Interlude 2.
The Quiet Port is Logistics' Nightmare

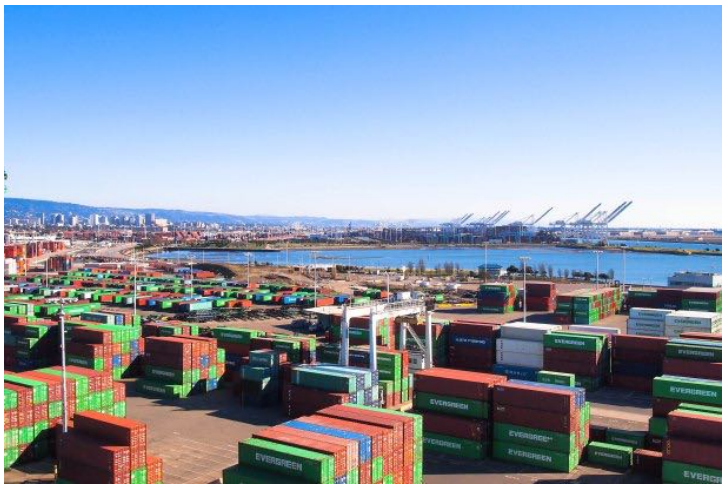

Figure 6: A backlog of shipping containers in the yard of a terminal in the Port of Oakland, CA. January 1 2015.

It is 3am on a Wednesday when we pick up the Port Angeles pilot who will take the ship through the Puget Sound. All day, we have been sailing through a fog that has hung so thickly around the ship that it has seemed we are drifting through clouds. The fog has delayed our pilot by four hours: sailing through the Puget Sound's narrow channel is already a formidable task, made Herculean by the fact that no one can see past the ship's nose. Take that, multiply it by the fact that the port of Tacoma is situated in a tight bottleneck of an inlet, that an unusual volume of vessels are docked in anchorages clogging passage to the port, and that the captain is being hounded by the charterer to get us to berth on time, and you get the shipper's Molotov cocktail. Short of risking navigating by radar, avoiding ships via yellow blips on a screen, waiting the fog out is the best option. At dinner, the captain sighs. "Fog, congestion, work slowdowns: at this rate, we will never get to China."

There is a massive traffic jam on the ocean, and the *Ever Cthulhu* is stuck in the thick of it. Already, we have been delayed for almost two weeks: the ship stayed for five days longer than the forecasted two in both Oakland and Los Angeles, and is expected to be in Tacoma for ten. Regularity, it turns out, can no longer be expected in the logistics industry, and my 26-day trip on the Ever Cthulhu is turning into a 40-day one. All along the West Coast, ports and berths have been choked with vessels in every terminal, and waiting ships have crowded into anchorages for days in far higher numbers than the captain has ever seen. Imagine the ripple effects of all this congestion: if a single ship takes six days longer than the usual 2.5 to be unloaded at berth, and ships that have been waiting experience those same delays when their turn at berth arrives, those backlogs reverberate outward in unfathomable ways, affecting ships' travel times to other ports around the world, trucking rates inland, air freight pricing, rail service delays across the U.S., and the availability of empty containers in China.

The reasons for this coast-wide congestion are unclear. In July, when the current International Longshore and Warehouse Union (ILWU) contract ran out, more than 70 multinational maritime companies and ocean carriers represented by the Pacific Maritime Association (PMA) began to negotiate a new contract with the ILWU for the 29 U.S. West Coast ports in its jurisdiction. The process soon turned ugly. The PMA blamed the increasing port congestion on an organized work slowdown by the union, alleging that the ILWU was deliberately not dispatching enough gangs to the waterfront. The union vehemently denied this, and countered that the PMA was deliberately mounting a smear campaign against them by cutting the number of workers at terminals and cancelling critical night shifts that would speed the cargo operations. The media, of

course, lapped this all up, blaming rotten agricultural produce, anchored ships, and delayed shipment arrivals on the ILWU, one outlet going so far as to ask whether longshoremen were "spoiling Christmas" (Elk 2014).

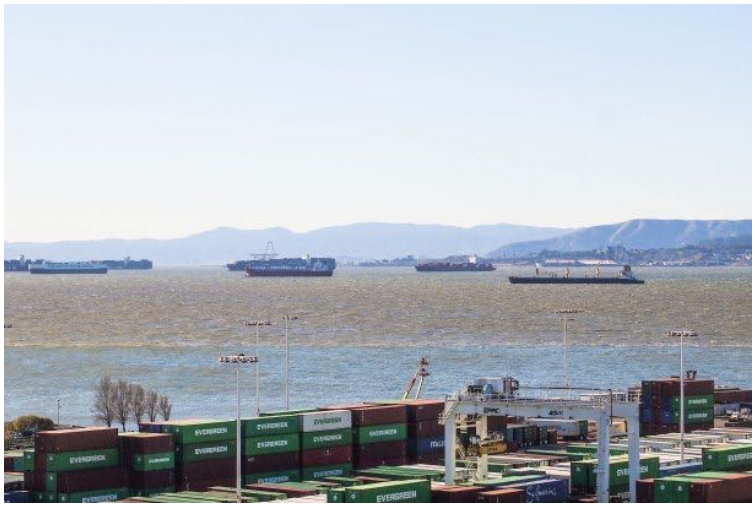

Figure 7: Scores of ships wait in an anchorage off the coast in January 2015 because the port of Oakland is at full capacity.

Chasing Giants

In truth, wider structural problems pervade the shipping industry. A massive shortage and mismanagement of truck chassis has prevented the much needed frames from reaching the right places at the right times. The deplorable working conditions of truck drivers who cannot make a living wage has led to a shortage of a port-wide trucking pool, leading to personnel shortages that have slowed down the delivery of containers to distribution centers inland. Rail car delays have slowed the movement of containers from docks to more distant locations. These setbacks have led to container terminals reaching their storage capacities, but these factors barely scratch the surface of the current logistics crisis.

A central problem, which I expound on in chapter three, is the expanding sizes of megaships. In fact, ports worldwide are only just beginning to understand the impact of this growing presence of mega-ships. Terminals originally built to discharge cargo from an earlier era of ship sizes (5,000 TEUs and below) are now struggling to handle cargo from ships that in 2005, had twice, and now in 2018, more than four times those carrying capacities. Of course, explains the chief engineer, "the thing is that with bigger ships, the number of ports you can call at are becoming lesser and lesser".

But while shipping companies are racing to build the biggest mega-ships to drive down their unit costs, most ports – even the largest ones such as Los Angeles-Long Beach – are ill equipped to handle these mammoths efficiently. To deal with incoming ships, ports spend hundreds of millions of dollars a year to adapt their infrastructure to new ship sizes. And as massive infrastructural developments chase giant ships, ports have come to epitomize the intensification and expansion of capital's supply lines in their physical congealing of sovereignty and capitalism.

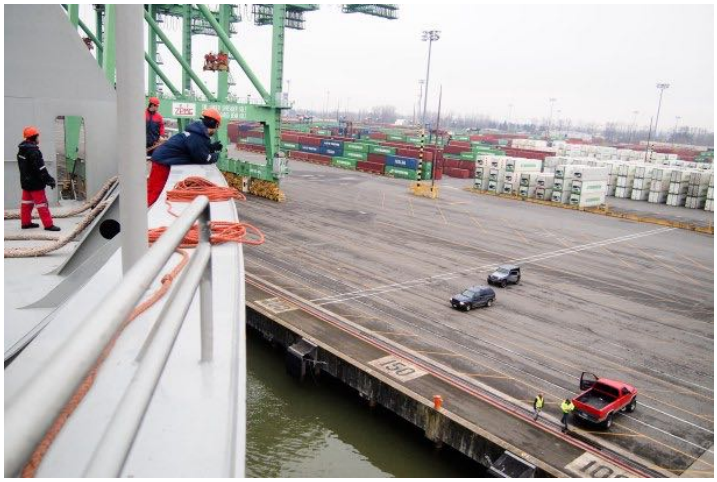

Figure 8: In an otherwise quiet port of Tacoma, where most longshoremen are on a work slowdown, a yard crew waits at the dock to receive the mooring lines from the crew of the *Ever Cthulhu*.

Supply Chain Vulnerabilities

I have twice observed the process of getting the ship safely to harbor from the bridge (the ship's command center) now, so for this arrival, I run down to the fore of the ship to watch the crew tossing out the mooring lines. As tugboats nudge the ship closer to the edge of the berth, I count five longshoremen waiting on the otherwise-empty waterfront. If you've ever tried tossing a line to someone on a pier to moor a little boat, imagine the same process working with six ropes, 3 inches in diameter and 300 meters long, made of thick woven plastic, being tossed ten stories down and across a stretch of water. A smaller lead rope is thrown out first. The OS (ordinary seaman, or the starting position on a ship's deck crew) misses thrice, and has to reel the line back in each time to try again. The longshoremen below cuss at the crew, who cuss back. It takes almost fifteen minutes just to get the ropes safely to the waiting longshoremen below. They hoist them onto shore and haul them over the bollards. Then they leave. No other workers are here. For the rest of the day, the port is a shroud of silence. Any illusions I had about the synchronized machinery of the port swinging immediately into gear have disappeared. I take a deck chair to the bridge to sit in the sun and read.

A quiet port is logistics' nightmare. As the *Ever Cthulhu* plods through its US ports of call, I realize that I am directly encountering the vulnerability of a supply chain that constantly faces the threat of disruption. Experiencing logistical life in this way has only confirmed for me that logistics is, as Alberto Toscano (2014) has recently put it, no more than a *fantasy* of full visibility, integral flexibility, and ultimately, control over supply chain flows.

This, then, is the Achilles heel of the logistics industry: Built on precisely-timed coordination between shippers and suppliers, the system is so vulnerable that what might have been a minor shock in the past today produces a domino effect that has worldwide echoes. Logistics relies on constant, uninterrupted flow. It is a system built on "just-in-time" networks of pull production and distribution, where supply replenishes in response to consumer demand in order to reduce the costs of standing inventories, bring products to market faster, and thereby accelerate the circulation of both commodities and the credit used to purchase them. Logistics circuits constantly face the threat of volatile interruptions, disruptions, and failures. In the perpetual race for larger, better, more automated, more innovative port and ship infrastructures, the spectacle of the technical sublime meets its other in week-long traffic jams on the Pacific Ocean.

Despite the fact that just-in-time vulnerabilities manifest in diverse forms, it is logistics workers that have been scapegoated by both the media and shipping associations for the West Coast's recent congestion problems: rather than understanding ILWU contract negotiations as a fundamental exercise of workers' rights and a necessary bargaining tool to safeguard their wages and benefits, mainstream media has instead screamed about the economic damage that these alleged slowdowns have caused, often neglecting the fact that port employers themselves, via the PMA, have falsely blamed on labor-related problems what are in fact larger infrastructural challenges in ports unable to sustain growing shipping volumes. To attribute larger structural problems to 'challenges related to the labor force', as the PMA's last annual report alleged, has in fact allowed shipping companies to generate the appearance of crisis so as to garner support from both

the public and politicians, driving the public's ire instead towards those workers who move the world's goods.

Figure 9: Stacking cranes in the port of Tacoma eliminate the need for trucks and forklifts, taking containers straight from where the cranes discharge them to their designated storage area in the terminal.

Labor and Automation

I have been taking all the extra time that the *Ever Cthulhu* has been stuck in ports to meet and talk to dockworkers. At the port of Oakland, I sat in a shuttle bus with broken doors on a seat held together with masking tape chatting with Shannon, a seventeen-year veteran of the ILWU. I asked Shannon why the PMA seems to have been blaming workers for the slowdowns. Pulling her gloves off in frustration, she said:

> "They want to put it on the ILWU anytime it comes to things like this, because it's a joint operation between the employers and us, so if I can shift the blame over to someone else, that's what I'll do. So, that's what they're doing, and it takes the blame off the companies from the businesses that want whatever they have in those containers. They're wondering, "Why can't I get my stuff?" And the companies want to put that on us."

In the grand scheme, it is not a problem for capital, always seeking ever-shorter transition times, to reroute its flows through other maritime passages. Ports are critical gateways to

inland markets, but goods can always be relocated and moved elsewhere. As a symbol of how disruptions can threaten the supply chain system, then, the quiet port is logistics' nightmare, but the particular quiet port generates a moment of crisis, allowing regional operators to capitalize on the fear of competition to generate major dollars for investment in automation and technology, which they require to compete with innovating ports elsewhere.

Labor, of course, is the inconvenient factor in all of this. Said one rather snarky marine transportation analyst: "The Stone Age didn't end because they ran out of stones" (Mongelluzzo 2014). For terminal handlers and shipping companies, if automation can move cargo at least as efficiently as manual labor but at a fraction of the cost of high-priced longshore labor, terminals in the U.S. will eventually choose to replace humans with machines. Under this rubric, humans are the unreliable 'challenge' whose removal will allow managers to regulate the efficiency of container transport. For logistics, automation is stability, and therefore the threat of labor disruption, rather than read as an exercise of fundamental democracy, is seen in economic terms as an "inefficiency." As Deborah Cowen (2014, 80) puts it:

> "The use of labor disruptions as a means to quantify attacks on the supply chain follows directly from the prior move of positing global trade as vital to national security. It allows for the exchangeability of radically different acts and actors, which have in common only the threat they pose to smooth circulation. A legal act asserting workplace democracy, when viewed through the lens of supply chain security, is not just like an attack, it *is* an attack on the integrity of flows."

Configured in this way, labor struggles are depoliticized in the logistics narrative, stripped of their historical and political contexts, and reduced to a problem for the supply

chain. Where smooth flow is king, even democratic contestation and political intervention can be read as a threat to be eliminated in the name of national security. Shannon tells me that although companies want to get rid of the human factor, automated terminals have experienced great setbacks in implementation:

> "I just know that different terminals now, with their automated systems in play, it hasn't proved a hundred percent positive. Things keep breaking down, they can't figure out how to make things work. So I can't say that it would be in their better judgment to put machines in place of humans, when they have Trapac in LA, which is automated, but they aren't moving work. They can't do it as fast as we do. They can't, when it's computerized. They're running these containers through computerized systems right now. Every one of these numbers means something, but when they have a machine to talk to instead of the human being, it's going to create problems. It's a process of elimination, that's what it is – and they are putting in more money to put broken machines into play than actually paying people."

Shannon's account is fascinating for a number of reasons, not least of which is her tacit recognition that the logistics network is – for the time being – being stymied in far more significant ways by its own internal problems than it is by organized political disruption. All over the world, terminals convinced that automation is the way to go have been experiencing similar setbacks: A surge of arrival delays in Hamburg last spring created massive backups when exporters continued to deliver containers to the port. In Rotterdam, the implementation of newly automated terminal systems caused weeks of severe congestion. And in October last year, Mumbai experienced a storm of delays when a terminal could not smoothly integrate a new crane operating system. For Shannon, as perhaps for many workers in this industry, the business management gurus who tout port automation as an inevitable eventuality of irrefutable economic sense have certainly not squared their technocratic expectations with the messy realities on the ground.

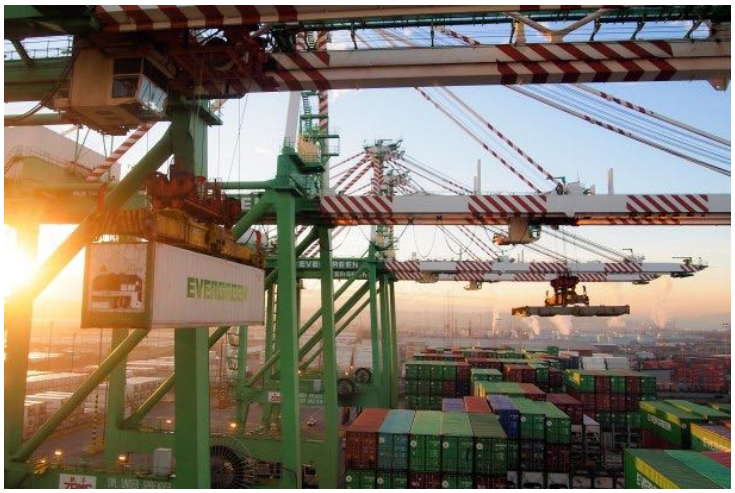

Figure 10: Gantry crane drivers are the 'quarterbacks' of longshore labor, but they have been in short supply, and the PMA has neglected to train more for the skilled operation.

New Promises for International Solidarity?

At this point, it is important to distinguish between how one might think of the effects of automation on the restructuring of labor in factories (the traditional Marxist site for thinking the antagonistic relations of capitalist production) and logistics chains. We know from Marx that automation threatens living labor not only by directly replacing it with the dead labor embodied in machines, but also by disciplining workers with the threat that automation – and thus job loss – presents. In the planetary scope of global supply chains, however, automation and technological innovation have not only restructured the labor force, but also brought it into new geopolitical relation. Shipping companies are beginning to offshore the cognitive work of clerical planning (e.g. plotting the precise algorithms which determine which containers go where on a ship, and when), separating it by oceans from the manual labor of crane driving and intermodal transport, such that a clerical worker in Shenzhen might create the loading plan for a ship in Los

Angeles, a captain on a ship receives directives from both the charterer in Germany and the shipping company in Taiwan, and so on and so forth.

On the one hand, then, the logistical chain has capitalized on work simplification and a division of labor which, as Adam Smith described long ago, separates conception from execution, substantially monopolizing cognitive labor within the hands of specialists while relegating relatively unskilled labor to manual, routinized work. On the other, these technologies have also brought into relation previously disparate and unconnected parts of the supply chain into one highly integrated (though nevertheless uneven) system at an unseen scale, constituting "the very possibility for the transnational intermodal integration of diverse forms of work and infrastructures" (Cowen 2014, 113). Some scholars see this global integration as potentially promising, suggesting that logistics workers can capitalize on their strategic positions along the key nodal points of global trade to actively pursue international solidarity within the supply chain in ways that were not possible before.

This promise of a new form of international solidarity may seem optimistic, but we should never forget that critical theory alone cannot achieve this goal; actively organizing around it can. While on the *Ever Cthulhu*, I have seen how easily rifts between various groups of workers can arise. The officers and crew on the ship, wanting for more information about why they are being made to wait in the US ports, have assumed that it is the fault of the longshore workers who "get paid so much more than we do, yet are always causing trouble!" After another morning during which the port superintendent reports that cargo loading operations will be cut in half, the chief mate opines: "these workers should be afraid." He cites the opening of the Panama Canal

that may redirect Chinese imports/exports to the east coast, the comparatively 'superior' efficiency of ports in Canada and Mexico, and the increasing automation of terminals that will "maybe replace these guys, finally". Perhaps understandably, the chief mate's account is situated in a world where hierarchies and boundaries between management and workers facilitate the running of his ship, but it woefully misses recognition of the broader context of worker struggles, and the historically hard-fought battle of the ILWU to win the best standards, work practices and benefits in the nation.

As Peter Olney, retired organizing director of the ILWU International noted in an analysis of the 2002 ILWU lockout (Olney 2003), the biggest challenge for the ILWU is not to resist the implementation of new technology so much as it is to organize within and without the jurisdiction: "Whether work is covered or not is not the issue; the issue is to organize". Under the threat that the PMA will encroach on the union's jurisdiction over the waterfront, Olney argues that the union should expand its notion of 'longshore and warehouse' work to the broader supply chain, since nothing prohibits the union from organizing work that an arbitrator has ruled to be outside its jurisdiction. In this sense, the most formidable challenge for the ILWU in particular, and logistics labor in general, may well be to broaden the conception of longshore and warehousing work across the vast supply chain that has linked clerical, warehouse, trucking, drayage, and rail workers across a transnationally integrated-yet-differentiated network.

Solidarity, in other words, is not automatic. It must be built, and the challenge of doing so in an industry where different groups of workers only interact briefly before ships sail and crews rotate over and over again is formidable. Various groups have already begun this work. The Industrial Workers of the World are currently assessing

how to better organize around supply chains and have launched a nation-wide UPS campaign toward this endeavor, the Workers Solidarity Alliance has launched an international solidarity campaign for better working conditions in Amazon's Polish warehouses (ZSP 2015), and Empire Logistics, a research collaborative, is mapping the global supply chain in order to provide useful and accessible mapping data that can facilitate collective actions and solidarity among related struggles.[29]

Figure 11: With their arms raised, gantry cranes sit idly at the dock on a foggy day without cargo operations at the port.

In a logistics industry constantly on roller skates, moving sites of distribution to intermodal facilities and ports all around the world, even workers at these crucial chokepoints are no longer 'safe' from the mendacities of capitalism. In shipping companies' minds, automation mitigates the unpredictability of 'the labor factor', even though automating projects around the world have continually failed and created more problems than they have solved. In the narrow view, and in the short run, this all makes perfect sense for shipping companies. Employers, preoccupied with how to

[29] The Empire Logistics supply chain mapping manifest can be found at www.empirelogistics.org. For full disclosure, the author is a member of the mapping team and remains involved in this collaborative project.

run things smoothly, continue to despair about the shortage of skilled workers, even as they have continued to automate. But that automation is being implemented into the circuit with great friction, causing far more delays than companies have anticipated. David Noble (2011) points out (albeit in a different context) the kicker in this feverish rush towards automation and technological revolution: "Thus, the shortage of skilled workers, engendered in part by automation itself, had now become the supreme justification for more automation. Before long, this inverted wisdom became gospel among managers throughout the industry" (41).

Yet, as Shannon noted in her last words before she drove off in the shuttle back to the terminal gate, workers have not lost their ability to fight:

> "We move a lot of weight, us workers, and we only get 1% of what these companies make here. Real talk, we keep the world running. Yet somehow people think we are the ones being unreasonable. Only, we're not automatons. We're people. We get hurt on the job all the time, we get killed, and we get blown up. I've seen my friend's leg sliced off from a cable that snapped. We're not machines, and if the companies want to replace us with ones, we're going to fight the battle all the way."

Lest we think that the burgeoning of logistical mega-structures auger the inevitable demise of worker power, we should remember that how and when technology becomes adopted and used is a deeply *political* question, not simply a technocratic one. The challenge for critical theorists must thus be to ask: what are the social forms and political challenges that condition and create contestations within the space of logistics circulation? And how may they be mobilized towards building new possibilities for global solidarity? Nothing, of course, is inevitable. As I write this, the Tacoma terminal is coming to a halt at 5pm instead of continuing to run its operations late into the night. The

lights of the gantry cranes have shut off, the ship is wrapping into darkness, and the containers lying in rows all around me will not be delivered to their destinations at the expected times. There is, perhaps perversely, a comfort I find in this.

Chapter 2.
Liquid Borders: Securing Mobility Through Containment

"We have shifted rather quickly form the monstrous edifice of the Berlin Wall, perhaps the paradigm of securitized territoriality, to a war on terrorism, and to forms of securitization, *enacted anywhere*."

R.B.J. Walker (2002, 17)

Introduction

The liquid border first becomes visible to me in the middle of the Pacific Ocean, five weeks into my transpacific passage on the *Ever Cthulhu*. We are still a day's journey from our first Asian port of call, surrounded in every direction by water, when the ship's security protocols begin to swing into gear. I am in the midst of a cleaning shift with the deck crew when they are called away to begin a stowaway search – a thorough process that takes over an hour for the crew to traverse the length and depth of the ship, opening every door and crevice, to see if anyone has secreted themselves into the hold of the ship. I participate, following the ship's Security Officer and second mate Antonio on his rounds in the cargo hold, dipping in and out of dark passages within the ship's belly as we look in every conceivable nook for a hiding human.

Antonio tells me that stowaway search protocols began in 2004 under regulations put in place by the International Ship and Port Facility Security (ISPS) Code, developed and signed into agreement in response to the September 11, 2001 attacks on the World Trade Center and the Pentagon (hereafter 9/11). As the designated officer in charge of security protocol, Antonio is holding a clipboard and checks procedures off a list that includes reports on the maintenance of security equipment, information on hazardous cargo containers, a record of the date and time of security threats, and a verification that

no stowaways were found, among others. The captain, in the meantime, is also preparing the sailors' passports for immigration checks, double-checking the shipping manifests, and readying the ship for a slew of security inspections scheduled upon arrival. Almost without me noticing, what the ship had slipped past was that invisible line between the high seas – international waters belonging to no particular state – and the exclusive economic zone (EEZ) of China. We were still about 200 miles away from our first port of call in Kaohsiung, Taiwan, but before any land was visible, the border had already come to us. The sea became a site of policing long before the coastline even appeared.

How are borders policed even before the border itself is reached? One might say that the border beyond the border is not an uncommon phenomenon: under the aegis of post-9/11 homeland security frameworks that "extend the border outward" (DHS 2009), US ports of entry now exist in airports and border zones in Canada or Mexico to facilitate efficient processing.

The ocean, however, is a unique territorial phenomenon in two ways: first, existing in the in-between of sovereign nations, it is not a site of policing in another nation, but a border in the no man's land of the 'international waters'. Second, oceans are primarily important to state functions not as gateways for regulating the flow of humans, but of commercial trade. What was noteworthy in the experience of the stowaway search was that as we crossed the liquid border, the policing measures were put in place to police people, but not goods. Goods passed through without much complication. It was stowaways – undesirable fugitives - who must be sought out and returned to their country of citizenship.

As we finish our rounds, Antonio and I walk to the cabins, where as a last step in the protocol, he peers into my closet. “No stowaway here!” he confirms with a grin, and goes on his way. A thorough inspection. Yet, as we carefully sought to police human cargo, the crew knew almost nothing about the content of goods on the ship. Whereas historically, ships have long held manifests on board and been in charge of monitoring the goods they transport, on modern container ships, the only containers whose contents are revealed on a manifest are those whose refrigerated contents must be monitored once a day, or whose hazardous material must be placed deep within the stacks to avoid contamination. For security reasons, no other container’s contents are divulged to the ship’s captain or crew, and only the clerical staff who oversee the algorithmic unloading systems from shore have access.

The opacity of containerized goods that move unmonitored across borders seems a stark contrast to the concerted policing of human cargo. Yet, in noting the peacefulness of the containers that lay undisturbed in their stacks as we scurried around the ship, what struck me was that the freedom of their movement across the border did not seem to be in tension with the policing of stowaways. Rather, at the maritime border, these acts of policing work as techniques of flexible border management that purposefully extend the spatial ambit of state surveillance, while strategically withdrawing from the policing of cargo. Because the movement of capital takes precedence over the security of the subject, the policing of human flows becomes a necessary act of governance, one that seeks to facilitate the smooth functioning of the global supply chain and prevent the threat of anything - or anyone - who might disrupt its flow.

US maritime security protocols put in place after 9/11 likewise affirms the importance of an uninterrupted supply chain. The ISPS code, first instituted in 2004, states that one of the primary reasons for the prevention of access by stowaways is their "consequent potential for disruption of maritime traffic" (FAL.11(37) 2011). At stake in the prevention of disruption is the continuity of commercial circulation, which security experts frame as a priority over the human right of passage. As one RAND study notes, maritime security becomes a delicate balancing act "because the international trading system is deliberately designed to be as open and accessible as possible (to keep costs low and turnover high), which necessarily means minimizing the disruptive impact of any security measures thereby instituted" (Chalk 2007, xiii). The study suggests that this balancing act requires a loosening of maritime goods security requirements, so much so that "the statistical probability of successfully smuggling a weapon or bomb is much greater than the probability of intercepting one" (Chalk 2007, 27). Thus, although a large body of scholarship on 9/11 and the so-called "war on terror" has traced a rapid escalation of border security techniques that identify, monitor, and police "risky populations" (Browne 2015; Vaughn-Williams 2009; Salter 2008; Amoore 2006), much less attention has been paid to the seeming laxity of security arrangements around the movement of cargo.

It is not my aim to argue for a more effective regime of border management around the security of goods. Rather, I am arguing that the apparent laxity in goods security arrangements is not negligence on the part of the US government, but a strategic effort to balance the necessity of safeguarding goods trade against the possibility of unlawful entry. The seeming tension between the policing of human movement and cargo

reveals a fundamental shift in US security policy in the context of the rise of a logistical economy. Rather than acting as oppositional techniques or tensions, the aims of security and efficiency are sutured together through maritime security since, in the context of an integrated global supply chain, a single maritime border disruption reverberates through the entire system, potentially threatening both the seamless circulation of both global transnational capital and the stability of national economies. For this reason, border technologies are strategically flexible and liquid at maritime gateways in order to control key flows and processes, restricting undesirable ones while facilitating the smooth movement of others. As this chapter argues, this flexible regime of border management works to sustain a neoliberal way of life (Lobo-Guerrero 2008, 219), prioritizing aggregate economic growth over the freedom of human movement.

Although such a dynamic is a common characteristic of the phenomenon of economic globalization, US counter-terrorist security strategies around the maritime border make for an interesting case study. Across various transportation modes (trucks, pipelines, rail, air, and water), maritime vessels move the most internationally traded goods into and out of the US, carrying between 40 and 46 percent of all international value, and between 70 to 75 percent by weight (Tomer and Kane 2015, 6).[30] Furthermore, maritime ports are highly concentrated chokepoints for goods flows: Although the United States has over 400 freight-handling ports that move international goods worth trillions of

[30] The second highest mover of international goods is airborne transportation, moving between 27 and 32 percent of international trade by value, but only 3 to 5 percent by weight. The discrepancy in value to weight ratios between these two modes is due to the fact that lower-value, higher-weight goods like energy products and agriculture are more likely to move by ship and higher-value, lower weight goods like electronics and precision instruments are more likely to move by plane (Brookings 2015, 5).

dollars a year,[31] there is an intensive concentration of those freight volumes at 25 port complexes that move 85 percent of all exports and imports by value, with water-borne commerce dominating the largest port complexes (Tomer and Kane 2015, 9). The US economy has, as such, a high dependence on the stability of goods trade entering through maritime ports. Compared with ports of entry by land or air, the US Department of Homeland Security accordingly understands the chief border security concern for maritime ports of entry not to be unlawful human entry, but the goal of "[safeguarding] and [expediting] lawful trade" (DHS.gov). Given the unique position of the maritime border in the circulation of trade, it is important to understand how maritime ports of entry serve a functional efficiency for the circuitry of capital, right at the political moment that statesmen around the world have avowed the need for the refortification of walls, borders and fences as assertions of sovereignty.

This chapter takes up this relationship between commercial and human border security by asking simple question: what are the political implications and effects of state's emphasis on the smooth flow of things and objects, in a time when states also police and contain the flow of people? To ask this question in 2018 seems perhaps callous, as over one million Syrian refugees have tried to cross the Mediterranean to Greece in the last two years only to drown or be detained at the border (IOM 2017). Yet, in interrogating the unproblematic way that goods move back and forth between states every day with very little surveillance, this chapter hopes precisely to examine the political economic logics that render human life secondary to the flow of things.

[31] The total international trade entering US ports of entry was worth $3.8 trillion in 2012, with a projected increase of 1.4 percent per year through 2030 (Tomer and Kane 2015, 2; Bureau of Transportation Services 2017). I was not able to find a more recent statistic.

Although the focus of the chapter is on US security policy at the maritime border, the argument has implications for the movement of global capital. This is because, as I will argue, US cargo security policy involves new roles for intermediary actors and spaces, placing the responsibility for US security policing on non-state actors (private shipping companies and their foreign employees, terminal operators, and risk management consultants), and spaces (pushing the US border 'out' into other nations). As such, the chapter's aim is to pay attention to how the actions of a particular government are reconfiguring the political rationalities and technologies through which global capital is being governed.

As I have argued in chapter 1, the circulation of goods, services, information, resources, and energy through territory has become crucial to the reproduction of capitalist social relations today. Over the past few decades, just-in-time and on-demand commodity production have begun to reorganize economic space through the architecture of logistics. As logistical management techniques have configured the material infrastructures of trade into circuitries of global production, national economies are increasingly reliant on predictable and reliable networks of just-in-time circulation, making imperative the need to secure stable flows of commerce across the state's boundaries. In the process, borders have been reformulated into mobile sites that employ pre-emptive risk assessment techniques, facilitating the faster mobility of a trusted few at the expense of suspicious others (Amoore 2006). They also function as a spatio-temporal continuum of controls on movement that stretch the power of surveillance between domestic and foreign domains, both in the present and future. (Bigo 2001; Vaughn-Williams 2010; Walters 2010).

Tracing the rise of a new architecture of territorial surveillance known as supply chain security, the chapter begins with an analysis of the geopolitical frames through which border management practices are constructed in response to geo-economic rhetorics of economic facilitation. It examines the geographic imaginaries that are produced through the formulation of supply chain security as an architecture of border management, first through the juridical expansion of legalized surveillance over the ocean as a liquid site for the free flow of goods and capital, and second through discourses of threat and risk that simultaneously produces humans as political subjects secondary to the flow of goods.

I. Closed Borders, Open Flows: Interrogating the binary

Contemporary debates about the status of borders in today's globalized world often take for granted a central assumption: that there is a fundamental tension between the economic forces that generate pressures for liberalized cross-border capital flows on the one hand, and the political and cultural forces that lead to militarized border enforcement and surveillance on the other. Wendy Brown (2010, 20) for example, remarks that this tension exhibits a paradox in which "even as those across a wide political spectrum — neoliberal, cosmopolitans, humanitarians, and left activists — fantasize a world without borders (whether consequent to global entrepreneurship, global markets, global citizenship, or global governance), nation-states, rich and poor, exhibit a passion for wall-building." Such understandings see the security of the subject and the movement of capital as forces that are counterposed by two distinct forces. Whereas transnational capitalists are the "agents of economic imperatives" who "urge border

softening measures" in support of the latter, the state and its agents are "advocates of intensified border policing" that support the former, seeking to combine older legacies of xenophobia with the post-9/11 "security script of fighting terror" (Sparke 2008).

Especially since 9/11, political and scholarly attention to this tension between openness and barricading have taken stock of the resurgence of border fortification and fallen on either side of a binary question: does a new focus on national security associated with the "war on terror" really mark the end of economic globalization, or has globalization persisted in different forms? Authors as diverse as Thomas Friedman and Wendy Brown suggest on one side that far from globalization inaugurating a world of free flows of money, goods, and people, new security technologies have "brought back the walls" (Friedman 2002) and reasserted the "attempt to define nation-state boundaries" (Brown 2010, 10). The intensified fortification of borders and walls signal, in this imaginary, the proposition that preoccupations with enclosure reappear precisely at moments when political sovereignty is threatened or being dissipated. On the other hand, refusing to see the resurgence of border building as proof of globalization's decline, other scholars insist that globalization has far from faltered. Rather, they argue, states have been left intact if not actually strengthened by globalization (Hirst and Thompson 2000, 2002), and globalization is simply reshaping to operate in more open and more risky environments (OECD 2002; Scholte 2005; Hall and Biersteker 2002).

The objective of this chapter is to complicate the assumed binaries between bordering and openness, and security and efficiency. In the context of a logistical economy, rather than being a paradox, increased security at the border and the intensified surveillance of subjects are premised on the same political-economic imaginary as the

fostering of open border flows and the free movement of capital associated with economic globalization.

Certainly, there is no doubt that there has been an escalation in the everyday identifying, monitoring, and management of 'risky populations' since the "war on terror," an emphasis characterized by a shift toward more exclusionary, state-centric approaches to the movement and regulation of cross-border flows. However, while much scholarly attention has focused on examining the political rationalities and technical implementations of these shifts in terms of the security and mobility of people, it has seldom interrogated these relationships in terms of the security and mobility of the global supply chain. This relationship became especially crucial in the wake of 9/11. Amidst decades of political experimentation with neoliberal policies and the push for a borderless free market, 9/11 marked a sudden rupture in the celebration of globalization, replacing it with new discourses of "homeland security", border protection, and risk mitigation.

Although an asymmetry between the restricted movement of people and the free movement of goods long pre-dates 2001, the qualitative differences in how post-9/11 cargo security initiatives frame the safeguarding of trade are worth attention. As not only transnational corporations but also states have come to be reliant on the seamlessness and speed of distribution networks, the task of making sure goods could flow in the face of border closures has become a major preoccupation of both public and private entities. Far from shutting trade down, 9/11 has led to the reformulation of border techniques around the a more sophisticated and flexible form of engagement — one which no longer works to directly secure territory and people, but seeks to regulate flows through the strategic deployment risk-based calculative models and practices. Risk management is emerging

as a key means of identifying vulnerable spaces and suspicious populations in contemporary security policy (Amoore and De Goede 2008, 6). It employs a "segmentation approach" that identifies and separates low and high-risk people and goods moving within legal channels, in order to selectively turn back those who pose a high risk, while offering "faster service" and "expedited flows of goods" for most travelers and shippers (DHS 2012). In addition, risk management techniques involve a distinctly international and spatial dimension: the Department of Homeland Security's (hereafter DHS) cargo and customs terrorism initiatives seek to segment risk categories "as far from the homeland as possible," so that by the time goods and people reach the United States, they have already been identified as "low-risk" and "lawful," and their movements expedited through the border (DHS 2012).

These strategies stretch the US border beyond the cartographic boundaries of the nation, on the basis that *within* the boundaries of the nation, the "key nodes, conveyances, and pathways" that are crucial to international trade flows are safeguarded and kept as open and fluid as possible, making domestic space safe for flows of licit global capital. Risk-based security strategies thus draw from a political rationality in which safeguarding seamless trade circulation *within* the US borders and *for* the wellbeing of the national economy takes precedence over peoples' right to mobility, framing the protection of international trade as a proxy for the protection of states and populations. In the US government's reassertion of the importance of trade protection after 9/11, marked by an intensified set of customs and cargo security initiatives, we thus see a collapse in the putative tension between states that close borders and transnational capital interests that seek to open them: under supply chain security, the interests of state and capital both

cluster around the need to preserve the constancy of trade as well as the containment of populations and people, sanctioning new forms of containment in the re-constitution of borders and security zones.

My argument here draws significantly yet also departs from Deborah Cowen's (2014) *The Deadly Life of Logistics*. In her third chapter, "From National Borders to Global Seams," Cowen argues that in a world of logistics and supply chain management, concerns for the efficient management and safety of economic flows now often trump geopolitical security strategy such as border closure. While my chapter draws insights from Cowen's interrogation of the links between security and efficiency, Cowen's focus is largely on the spatial cartographies of 'global seam space' that are produced in the process of managing supply chains (2014, 53-70), rather than on the technological implementation of risk strategies employed to implement cargo security. There is significant overlap in the empirical focus of our work, but where I depart is in seeking to understand the specific logics of preemptive risk management that arise out of supply chain security techniques. In my assessment, the centrality of risk-based calculative models to the spatial expansion of cargo surveillance has not yet been fully explored. While Cowen's exploration of cargo security largely examines the shifting geographies of border zones and their associated geopolitical and geo-economic consequences, she spends less time on the tension I have raised between goods and human security.

The implications of this tension are crucial, because as contemporary logistics works as a form of managerial governance across the global supply chain, the state has come to play a role in facilitating the general economy by prioritizing the circulation of things, while producing the mobility of human subjects as secondary to the flow of

goods. In fact, although supply chain protection is listed alongside the protection of borders and citizens, techniques of goods protection have actually become fused with techniques of policing passenger travel, suturing the safeguarding of cargo to the production of risk-segmented populations. As we will see in my analysis of several interrelated risk-management security strategies, increased security at the border and the safeguarding of economic flows are not actually conflicting strategies. Through the application of risk-based sorting to both goods and people, the US DHS reproduces a political economic imaginary in which free-flowing goods and contained people emerge from the same commitment to a healthy national economy.

To illustrate these points, we focus on how the United States' Department of Homeland Security (DHS) has developed strategic plans and policies designed to secure the federal protection of flows of commerce through the designation of supply chain security since September 11, 2001. Rather than understand economic globalization and securitized nationalism to be opposing forces, border management technologies today may be better understood as shifting, flexible forms of management that neither abandon or deny life, but actively regulate the spatial limits of border enactments, extending surveillance strategies through the use of risk mitigation techniques that designate disruptions to the supply chain as matters of potential national "emergency". In the following sections, I argue that the securitization of supply chains is part of an emerging larger strategy to organize and control processes of commodity circulation through the extension of the state's space of surveillance through the liquid border, and a related strategy of risk management, in ways that reconfigure how and where threat and

uncertainty - and those in charge of managing and preventing them - are designated and managed.

Circulation and Risk

This understanding of the supply chain as an object of protection was already anticipated in the eighteenth century. In *Security, Territory, Population,* Michel Foucault argues that society comes to be secured through governing circulation, where the creation of the state, the economy, and the national population was focused on "an intensity of circulations: circulation of ideas, of wills, and of orders, and also commercial circulation ... fastening them together and mutually reinforcing them" (2007, 15). In fact, as Foucault traces, the origins of the police did not begin with the disciplining of the state, but its logistical administration. In times of crisis, the police were charged with the allocation and circulation of resources like grain, creating a system of governing where the negative consequences of the free market, such as food shortages, became nonpolitical and technical problems that the market itself should solve. Whereas previously it was the sovereign that had a more direct control over the price of bread – so that hunger was the direct political responsibility of the state – the move to a free market meant that the laws of supply/demand took over, turning a formerly political problem of hunger into an economic issue. By turning a problem of governance into a problem of circulation, the state produces the population as an object to be governed through market rationalities. It is through the development of institutions and procedures that the population comes to be grasped as a problem - chief among these the development of statistics such as birth rates, GDPs, consumption patterns etc., that define the population through abstract and

statistical forms of governmental knowledge. As such, the health and welfare of the population become the dominant priority - shifting the art of government from the sovereignty that inheres in the 'right to kill' to the biopolitical imperative to "make live". In doing so the state relies on strategies and tactics that, while still concerned with disciplining individuals, must also retain power in order to target the population as a whole.

These efforts to govern the population through economic rationalities are indelibly tied to securing circulation. Efforts to facilitate circulation emerge, for Foucault, out of a "general economy of power" that arose between the sixteenth and eighteenth century as the state sought to vitalize its "art of government" with the view of protecting itself from interstate competition (Foucault 2007, 30; Foucault 1991, 97; Larringer and Doucet 2010, 5). Foucault understands circulation as all forms of "movement, exchange, and contact" (Foucault 2007, 64). But it is in the need to organize, control, and produce normative judgments about different *kinds* of circulation - and the threats they entail - that the need for security arises. Foucault introduces security as a biopolitical practice of "organizing circulation, and maximizing the good circulation by eliminating the bad" (2007, 18). In this understanding, security is not grounded in strategies or measures of defense and containment, nor centered on the territoriality of the state, but is a set of mechanisms or apparatuses that seek to maximize the positive elements and minimize the risks of circulation.

As Foucault, argues, the objective of security is thus to "allow…circulations to take place," "controlling them, sifting the good and the bad, ensuring that things are always in movement, constantly moving around, continually going from one point to

another, *but in such a way that the inherent dangers of this circulation are canceled out*" (2007: 65, emphasis mine). Or, as Claudia Aradau and Tobias Blanke put it, "what matters are 'unruly movements that need to be prevented, contingencies that need to be preempted, and good circulation that is to be fostered" (2010, 45). In this way, rather than governing through territorial modes of security, states come to 'secure' the flow of people and things by experimenting with strategies to produce and ensure the stability of 'good' circulations, while preventing disruption from those deemed 'bad' and unproductive for the population as a whole.

Foucault's analysis of the relationship between security, circulation, and population is crucial to an analysis of the securitization of logistics. Emphasizing the role of circulation as a technology overseeing both security governance and capital accumulation rather than creating conflicts between them, Foucault notes that security and capital flows both emerge from the same political economic logic: that of regulating and controlling threats while ensuring the continued movement of the total social capital. If industrial capitalism valued the process of production over circulation, under the globalization of capital, as Comaroff and Comaroff argue, "production appears to have been superseded, as the *fons et oligo* of wealth, by less tangible ways of generating value: by control over things such as the provision of services, the means of communication, and above all, the flow of finance capital" (2000: 295). While Marxian scholars have directed much attention to how finance capital has superseded industrial capital as the primary arbiter of global regulation value, much less attention has been paid to the role of commercial capital, and the infrastructural and logistical systems required to accelerate the circulation of goods within its circuit. As the global economy has been increasingly

organized through the just-in-time realization of value, a fear of "disruption to circulation" has become recast as a critical object of threat within the vital systems security networks that have emerged in the context of a logistics economy.

II. Liquid zones of US maritime security

Although it is not the only site at which the relationship between the circulation of goods and people comes to nest, the maritime border deserves particular attention because it is the primary site through which US imports and exports flow, and is thus a key gateway for massive flows of capital on which the US economy depends. Far more so than landed gateways or airports, ports control flows of cargo at such quick rates and high volumes that full inspection of all trade flowing across the border is impossible. Because imperatives to ensure economic efficiency often allow illicit goods to move in and out of shipping containers and cargo holds relatively undetected, ports function as transnational hubs where licit flows of people, technologies, goods intersect with the illicit flows of illegal trafficking, corruption and terrorism offering a safe haven for drug trafficking (Hall and Antonopoulos 2017), transnational crime networks, and illegal weapons trade. As such, maritime borders offer both an apt liquid metaphor for thinking about shifts in border management, and raise important empirical questions about extraterritorial exertions of legal might.

Border management techniques have experimented in recent years with making the border as flexible as possible, determining the space over which legal power can be exerted in accordance with trade facilitation. I term these security practices efforts to create *liquid borders* because this language attends to experimentations with border

management on two registers; first it stresses that the border has not disappeared or been supplanted by zones (Easterling 2014), seam spaces (Cowen 2014), or globalized spaces of flows (Castells 2000, 19). Rather, the border is a site of experimentation that serves as a shifting line of movement - one that seeks to draw and redraw the boundaries of US jurisdictional power according to what best facilitates the international supply chain. In turn, I argue, an analysis of US cargo security policy reflects a broader political-economic rationality in which methods of border management emerging from a single national economy involve a broader set of non-state actors, such that domestic cargo security actually becomes a matter of cross-national governance.

Second, I emphasize the term "liquid" not simply as a convenient metaphor, but because experimentations with "pushing the border out" are especially concerted in maritime territory. What is typically treated as a borderline bifurcating two distinct spaces is, in the maritime world, subject to norms and laws that transform the ocean into a space unto itself, simultaneously reconfigurable by territorial enactments and yet not easily controlled by security forces. The liquid border is not simply a conceptual example of problematized border spaces, but designates actually existing spaces between national territories that act as spaces of transition subject to specialized government. The key shift marked by experimentations with the liquid border is that security practices shift away from *stopping* threats, and toward *mitigating* them while ensuring the smooth circulation of global supply chains. US maritime security policy is not the only example in which risk management strategies are being employed at the border, but it is unique because the US emphasizes the need for international cooperation to protect its domestic borders, on the basis that interruptions to the flow of goods to the US is a threat to the global

economy *in general*. This rationality has impelled 'stakeholders' in foreign trade zones to participate in US maritime security initiatives, turning a national security challenge into a global one.

Shifts in US jurisdictional power over maritime spaces have occurred over the last two decades in relation to the policing of illicit trade and the war on terror, but have gradually shifted to the policing of licit goods as well. In its (2007) "National Strategy to Enhance International Supply Chain Security," the Department of Homeland Security notes that terrorist organizations utilize the global transportation system to both generate and move funds. As the DHS surmises, the expansive global container-shipping complex offers a logistical channel that favors the covert movement of weapons and personnel. Making the link between terrorist financing and cargo movement, the DHS notes:

> "An early hallmark of Al-Qaeda was the network of corporations set up by Osama bin Laden when he lived in Sudan, which generated finances for the organization's activities. Similarly, funds are generated through illegal activities such as narcotics trafficking. Then, funds are moved via money laundering schemes, directly carried by witting or unwitting individuals, or otherwise moved as a form of 'cargo'. Thus, a full spectrum supply chain security program requires that even at the point of origin trade partners must be known and trusted to be moving what is claimed and the financial flows similarly tracked" (DHS 2007).

It is on the basis of these links that the DHS has made incremental adaptations to maritime defense zones, in which a central force has been the US Coast Guard. As the only branch of the military that functions as a law enforcement agency, the Coast Guard's role in national security is constituted by four concerns: coastal security, migrant and drug interdiction, and defense readiness. Yet, all four concerns are united by the Coast Guard's mission to prevent 'illegitimate activities, inevitable accidents and natural

disasters" from challenging "the safe, secure, and free flow of legitimate global commerce" to and from US ports and waterways (USCG 2012).

For much of its 227 year-old history, the Coast Guard policed contraband - from prohibition-era alcohol smugglers to Chinese opium - by waiting for smugglers to cross into US territorial waters before arresting them. However, as the Justice Department began escalating the war on drugs in the 1970s, Justice Department officials began to appeal to congress that marijuana trade from Colombia to the Caribbean had to be stopped well before the drugs arrived in the US. While the Coast Guard had the authority to chase and hold smugglers in the Caribbean, lawyers could seldom justify holding traffickers criminally liable in US courts if they had been caught in the legal grey zone of international waters.

As a result, in 1986, Congress passed the Maritime Drug Law Enforcement Act, which declared any drug trafficking that occurred "on board a vessel of the United States, or on board a vessel subject to the jurisdiction of the United States" unlawful (USCG 2012). The language of the bill is somewhat deceiving: although it suggests jurisdictional power is limited to vessels bound for or within the coastal waters of the United States, the letter of the law allows for wide interpretation: Even if there was no proof that the drugs, often carried on non-US-flagged boats, were bound for the US, the latter clause allowed lawmakers to suggest that drug smuggling in international waters was a crime against the United States, allowing the Coast Guard to detain an average of 200 suspected drug smugglers a year[32].

[32] Interestingly, current White House chief of staff General John Kelly is largely responsible for a recent escalation of domestic prosecutions of extraterritorial activity. Viewing drug smuggling as an "existential"

The passage of the Maritime Drug Law Enforcement Act in 1986 was to set an important precedent for extraterritorial projections of US military might in the war on terror. Although the United Nations Convention on the Law of the Sea (UNCLOS) sets clear zones that distinguish between territorial seas and international waters over which states have limited jurisdiction, a limited and little-known legal spatial designation, known as the contiguous zone, provides leeway for a loose interpretation of the extent of the state's jurisdictional power. Under UNCLOS, the contiguous zone is an obscure oceanic division defined in a single article (Article 33) of the convention: Defined as the area of ocean out to 24 nautical miles from the coastline, the contiguous zone is a liminal space - neither territorial waters nor the high seas - in which a state has the right to enforce and adjudicate certain rules and law. Its designation as a specialized policing zone is reaffirmed by the fact that the only other article in UNCLOS to mention the zone is Article 111, which lays out the right of hot pursuit.

Within its contiguous zone, a coastal state may exercise the control necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territorial seas or punish such infringements when the violation is committed within its territory or territorial sea (LOS art. 33). While provisions for the contiguous zone do not officially extend to security interests, in practice the ability to enforce "customs laws" extends to cargo import and export controls motivated by security

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threat to the United States, Kelly recently stated during a lecture at George Washington University that "We are a nation under attack" from transnational criminal networks. "The more we push our borders out," he told the audience, "The safer our homeland will be. That includes Coast Guard drug interdictions at sea" In 2016, under his command of the Southern Command, the Coast Guard detained 585 suspected smugglers, mostly in international waters, and chained them aboard American ships. Over 80 percent of these men were tried in US courts, an increased from a third of detainees in 2012. (Freed-Wessler 2017, n.p.).

concerns. As such, concerns over illicit goods such as the carriage of arms can arguably be deemed a threat to national security, allowing coastal states to exercise control beyond their territorial seas and into the contiguous zone.

Since 2002, when the Maritime Transportation Security Act (MTSA) was enforced, the DHS has seized on the liminal legalities of the contiguous zone to expand the reach of the Coast Guard's security regime. While the contiguous zone is an international legal category that many countries treat effectively as their territorial waters, there is no standard rule for resolving conflicts or enforcing territorial claims in the contiguous zone. The US uses the negotiable jurisdictional realm to its advantage, encoding in the MTSA a rule that any vessel located or entering the contiguous zone of the United States is ruled to have effectively entered US territory and can be subject to US policing measures, even though the contiguous zone is, under UNCLOS, designated international waters. This ruling explicitly lists the 24-mile extent of coastline as territory in which the Coast Guard can operate, extending the space for drug, migrant, and cargo interdiction. Although there have been no reported cases so far of terrorist apprehension or weapons trafficking interdictions that have required the use of the contiguous zone, the little-known law has been employed heavily to support migrant and drug interdictions.

That this border is both physically and juridically liquid is precisely the point: the DHS is able to claim the world commons as a zone for state policing on the grounds that the world's oceans are international boundaries that are particularly vulnerable to breaches in security; accordingly, the MTSA's economic imperative to protect "the free flow of interstate and foreign commerce" provides justification for the expanded operation of US military power (S.1214, 2002).

This relationship between free commerce and state security pulls together what Matthew Sparke (2008, 134) calls a "neoliberal nexus of securitized nationalism and free market transnationalism:" since the protection of trade provides legal imprimatur for drug, migrant, and criminal interdiction, it conceals the cultural and political forces that shape "homeland" security's racialized imaginary of those deemed criminals and untrustworthy aliens - often from Central America - who must be kept out in order for licit trade to flow. The liminal legalities of the liquid border allow the US state to affirm the potential for control and order in spaces typically 'outside' the limits of sovereign authority, encoding exclusionary policies in the logic of economic discernment.

The "liquid border" thus encapsulates a key tension between traditional state borders and the imperative to ensure the freedom of commerce: while maritime disputes remain ensconced in territorial logics of fixed borders and defined jurisdictions, the object of their security nevertheless includes the paramount necessity of ensuring a global empire of cross-border flows. Because the success of logistics relies on control over and access to the information necessary to monitor geographically dispersed production and empires of flexible specialization (Harvey 1989, 15), states become a key component of the apparatus that ensures how circulation is be controlled, managed, sped up and slowed down. In this way, circulation itself becomes an object of securitization, in which "practices of governing that distinguish 'security' from politics, deploying the former in a general process whereby a policy issue is turned into a security issue, removing it from the realm of political contestation" (Stasiulis and Ross 2006, 335).

III. From the policing of illicit traffic to supply chain security

Around the same time that the US Coast Guard broadened its maritime jurisdiction to police illicitly trafficked goods, the US Customs and Border Patrol was also experimenting with risk-based security measures that "push the border out" to foreign ports as a calculated strategy to safeguard the efficiency of licit trade flows across US ports of entry.

Such efforts to balance trade efficiency while pursuing border security were formulated in the wake of the September 11, 2001 attacks on the World Trade Center towers and the Pentagon. While debates over domestic anti-terrorist security measures were initially focused on air passenger traffic and aviation security, the issue of maritime goods movement soon became prominent. Policymakers noted that with 3,700 container terminals in operation at 361 seaports in the US, and over $900 billion or 95 percent of all US overseas trade flowing through seaports, maritime borders could be strong potential targets for terrorists (Chalk 2007). Although some supply chain experts registered a concern with loss of life associated with terrorist attacks - citing a 2004 case in which two terrorists infiltrated the Port of Ashdod in Israel and detonated themselves, killing 10 port workers - the vast majority have been concerned with the potential for economic disruption and the shipment of weapons components and dirty bombs. Indeed, as one security assessment suggests, the potential for loss of life is relatively irrelevant to the main concern: "The threat to life [resulting from the Port of Ashdod terrorist attacks] is significant, but even greater is the potential economic threat were a container to be used as a bomb at a major port, thus closing operations" (Koknar 2005).

Of primary concern to policymakers is the need to balance gatekeeping with trade facilitation (Widdowson 2007). Indeed, the fact that long-term costs associated with

post-9/11 border tightening became of deep concern has much to do with the revolution in logistics: because demands for accelerated connectivity are intensified through just-in-time production techniques, economic stability depends not only on the extent of connectivity to trade networks, but the *speed* and mass of connectivity. Because supply chains are multi-location and time-sensitive entities, disruptions cascade through the system, with upstream disruptions causing downstream stock outs. One example alarmingly predicted:

> "National security analysts estimate that if a terrorist attack closed New York Harbor in winter, New England and upstate New York would run out of heating and fuel within ten days. Even temporarily hampering the port's operations would have immeasurable cascading effects" (Finnegan 2006).

Several such studies have been published in the wake of 9/11 in venues ranging from the Congressional Research Service (CRS 2002; 2005; 2009) to the United Nations (UNCTAD 2010; UNECE 2003), think tank policy briefs funded by global banking institutions (RAND 2007; 2014; Brookings 2015) and security studies journals (Haveman et al. 2007; Peterson and Treat 2008). Such research claimed that post-9/11 securitization measures, in attempting to combat terrorism, would inevitably threaten trade in the process. For instance, the Trade and Operations Advisor to the International Chamber of Shipping, Brian Parkinson, claimed in 2003 that "[the] measures developed to combat terrorism, in addition to terrorism itself, may threaten trade, which is an engine of growth and offers the best chance of steady progress for both developed and developing economies" (UNEVE 2003, xlii). In the work of these institutions, what emerges is a concern that post-9/11 security measures put in place to safeguard nations from one form of vulnerability (terrorism) inevitably open up other vulnerabilities (disruption to licit

trade). As Deborah Cowen has argued, "in a world of logistics and supply chain management, trade disruption (not the twin towers) was the key casualty of 2001." The economy's dependence on the speed and smoothness of the just-in-time supply chain now implied that "border security can itself be a source of insecurity for the supply chain" (Cowen 2014, 78).

As a result, in the aftermath of 9/11, it was not only the US, but international governing bodies, allied national governments, and logistics companies that rushed to create and experiment with new policies to respond to the threat of disruption and restore the continuity of trade circulation. From 2002 to the present, the United States government has enacted a total of eleven comprehensive plans to respond to supply chain security concerns, followed shortly after by international global standards issued by the International Maritime Organization in 2004, the International Standards Organization in 2005, and the World Customs Organization in 2006, each under direct orders from the United States (IMO 2004; Cowen 2014).

Experiments with supply chain security in the United States have fundamentally shifted global practices of border management. Customs authorities prior to 9/11 were responsible primarily for clearing imported goods after the goods had arrived at the border, by reviewing entry documentation submitted by ship's captains upon arrival. As calls for heightened security measures increased in the aftermath of 9/11, however, it became clear that such methods, especially if intensified, would mean burdensome economic disruption to the flow of material goods. As such, cargo security programs developed after 9/11 moved from examining goods after the point of entry, to the pre-shipment examination of exports.

US security programs to 'push the border out' represent a marked shift from standard security procedures employed by other states. They require expanding the definition of ships and territorial spaces that may be subjected to US jurisdiction, and much like the Maritime Drug Law Enforcement act, justifies extraterritorial policing in the name of protecting the homeland. One key program instituted in 2002 is the Container Security Initiative (CSI), which mandates that all containers bound for the US are to be first examined at *foreign ports* well before they arrive on US territory, extending the power of US surveillance to locations well beyond its purview, and slowing the just-in-time movement of goods accordingly. A key aspect of the CSI is having partner nations sign onto a pact that allows the defense of the US border to be exercised in another jurisdiction. The CSI currently posts American CBP agents in fifty-eight ports around the world, accounting for a total of 85 percent of all containers arriving in the US. Both strategies of advanced documentation aim to extend the U.S. zone of security outward. Emphasizing that "securing the Nation's borders in the post-9/11 environment demands a complex, layered approach," the Customs and Border Patrol recognizes that the border "is not merely a physical frontier;" but requires a global spatial imaginary to "push the borders out" (DHS 2011).

Such an approach emphasizes thinking not just in terms of the US border as that which marks its own territory, since a threat has the greatest potential for harm when it has already arrived on US territory. Rather, border security consists of layered efforts to "enhance security around the world to create a buffer," seeking to "[push] the security perimeter outward from physical borders whenever possible," so that "the geographic border is the last line of defense, not the first" (DHS 2009, 6). As Grillot et al explain: "If

freight policies can ensure greater security at points well beyond our national borders, then US ports of entry become a final rather than an initial line of defense. Detecting nuclear weapons and other dangerous material in containerized freight before it reaches a US port of entry is the best solution to addressing US vulnerability" (Grillot et. al 2009).

These experimentations with border space do not aim to dismantle border security or render it obsolete; rather, they acknowledge the limits of a territorial model that cannot serve the dual strategy of efficiency and security. Instead of understanding the border as a physical zone, the act of dispatching border agents to other ports around the world bracket these foreign trade zones as spaces in need of US intervention. By 'pushing the border out', the US DHS segments the risk of terrorist attacks, detaining high-risk cargo and people "as far from the homeland as possible" while "expediting low-risk, lawful movement through the United States" (DHS 2012).

These measures are not simply driven by security logics but also motivated by a need to improve the efficiency of flows within domestic US borders. In the context of a logistics economy where it is not just the consistency of trade circulation, but also the *speed* of just-in-time networks, ensuring that high-risk traffic is detained at foreign ports before they move to the US helps to reduce log jams and congestion associated with tightened border control. The extra-territorial extension of US maritime security may be motivated by US national interests, but the consent of 58 other nations to the implementation of the US Cargo Security Initiative at their ports speaks to the transnational impact and interconnectedness of global supply chains. Yet, the CSI has not been implemented without some frictions and tensions. It has been noted that some US security initiatives are perceived somewhat skeptically by governments abroad, with

some international officials citing a lack of reciprocity on the part of the US, which has paid less attention to the security of its own exports (Grillot et al 2009, 7). While these frictions suggest that the US' attempt to seamlessly integrate security and efficiency have not been fully successful, the cooperation of other governments, even if somewhat reluctant, speaks to the international recognition that an interruption to US trade would disrupt not only the national economy but the continuity of global circulation, making the just-in-time sensitivities and interconnected networks of supply chain systems a global, rather than national, vulnerability.

Thus, while CSI measures are formulated to facilitate just-in-time shipping *within* the borders of the US by filtering high-risk cargo and people before they cross the ocean, supply chain security measures in the US have global impact. It is noteworthy that the DHS works closely with the International Maritime Organization, INTERPOL, the International Civil Aviation Organization and other international organizations to create "global standards for security and resilience of the global trade and travel system" (DHS 2012). That the protection of international trade flows into the US is a matter of international rather than national concern suggests that the political economic rationalities motivating supply chain security extend beyond the need to protect a national economy and into the safeguarding of interconnected global flows.

Incorporating the Private Sector

That the US state has taken an increasing role in the securitization of trade flows tells only one part of the story. While threats of disruption have been of profound concern to the US government, trade disruption also impacts 90% of commercial and

retail markets around the world. Because logistical lean management systems call for slimmed down inventories with little redundancy or slack, any disruption results in cascading effects for both businesses and states whose economic welfare depends on transnational capital flows, giving rise to an architecture of security that incorporates a wide swathe of actors into the work of pre-empting disruption. This architecture - known as "supply chain security" - employs a "layered" approach that emphasizes the importance of public-private cooperation and information sharing between governments, manufacturers and shippers alike. Supply chain security proposes to "solve" an older problem: guarding the seamless circulation of goods – with a quite *new* solution – a multi- stakeholder, resilient supply chain, which is "prepared for and can withstand evolving threats and hazards, and rapidly recover from disruptions" (DHS 2012).

At the heart of such an approach is an emphasis on 'risk management', to which this chapter now turns. Risk management seeks to resolve the difficulty of pursuing security and efficiency together by forecasting and forestalling disruption so that action is taken *before* there is a proof of harm. As a precautionary rationality, risk management configures any activity that threatens the supply chain as a source of potential "emergency," justifying the intensified surveillance and policing of particularly racialized bodies on the grounds of identity-based exclusion, while facilitating all other cross-border flows. This produces something quite new: supply chain security supplements the securitization of the state and its people, with the securitization of the flow of capital and its efficiency. Since capital must flow, even the delay-causing border – that which is supposed to 'protect us' - has to be made more liquid, more flexible, in order to

accommodate smooth product flows, while it simultaneously polices the movement of human lives.

One result of the greater integration of the private sector as national security 'partners' and 'stakeholders' is that the responsibility for border security has become unexpectedly relocated onto transnational workers, who are increasingly charged with performing security work. The authorization of all kinds of societal groups to make security decisions fits into an established pattern in the war on terror. Campaigns that ask the public to "be vigilant" authorize truck drivers, workers, airplane passengers, and citizens in general to report suspicious activity or unusual behavior (Amoore 2006; Erickson 2007). In the case of transportation workers, however, what distinguishes this imperative of increased responsibility is that the very workers who are tasked with assessing threat are also denied the ease of movement to and from these ports. In fact, they are increasingly subject to invasive systems of surveillance, while the goods that they move pass through without trouble. Supply chain border security therefore does not only project the border *out*, it also conscripts foreign nationals *in* to the work of securing US national interests.

In cooperation with the US, in 2004 the International Maritime Organization legislated the International Ship and Port Facility Security (ISPS Code), which aims to standardize risk assessment and enables governments to 'offset changes in threat with changes in vulnerability for ships and port facilities' (IMO 2017). Since 2004, ports have to comply with the ISPS Code to "perceive and manage security threats through integrating local/domestic threat-levels into a global awareness-level" (Bichou 2004, 328). The program requires, first, that exporters provide customs documentation in

advance of shipping goods to the importing country, allowing customs authorities to ascertain a ship's level of threat and mark it for inspection and second, that shipping companies adopt security protocol to aid counter-terrorist efforts. The implementation of the ISPS code worldwide not only relocates US border security operations to foreign ports, but also onto the moving territory of ships, placing some of the responsibility of "security work" on the shoulders of transnational workers.

On New Year's Day, 2015, I found myself standing with the captain of the *Ever Cthulhu* at the port terminal in Oakland, California, waiting for a friend to pick us up and take us to Oakland for the day. Everything in the port is quiet – longshore workers have the day off – but the captain is being told at the security gate that he cannot leave because the "crewmen's landing permits' have not been fully filled in. He shows me the pink slip on which his 'visa' has been stamped. On it were the questions: "Do you intend to commit crime in the US?" "Do you intend to participate in human trafficking?" and "Do you intend to assassinate the US President?" He laughs. "Would I ever check yes, even if I did? Sometimes these questions are so ridiculous that you have a feeling that you are a third category human being," he tells me in his deep German voice. "They make all this effort to monitor the crew, but in reality, these Filipinos do not get paid enough to sight-see. They wait for months to come to America — so that they can get on Wi-Fi to Skype with their families on the ship! So I want to say to American customs, "do you really think that for us, America is the Promised Land? Most of my crew never even enters the country. They stay on board, wanting to be home" (Interview with captain, December 2014).

Later, climbing back up the gangway after a day in Oakland, I stopped for a chat with Rodriguez, who was on gangway watch duty for the night. Since the implementation of the International Ship and Port Security (ISPS) code, an International Maritime Organization protocol that institutes international regulation for security preparedness, ships' crews have had to take on additional duties as the ships' security guards. "Now we have to control access to the ship 24/7 when it is at berth. Before 9/11, nobody had to be on the gangway watching for intruders. The port already has barbed wire fences and security guards everywhere. You can't get in without an ID card. Only in America, you must make triple sure nobody is trying to sneak in" (Interview with Rodriguez, December 2014).

Rodriguez and the captain's comments both point to the gap between the popular imagination of the US as a desirable destination and the realities of the long, interminable cycles of labor demanded of seamen that keep them captive at port. They also indicate that the story of US cargo security implicates a diverse array of global actors who are not necessarily directly invested in the protection of US borders. I ask Rodriguez if he knows what to look for: "What does a terrorist look like? What are you supposed to do if one comes on the ship?" Rodriguez laughs. "I think terrorists are supposed to look like me!" he jokes, gesturing to his dark skin. "We just have to check off this list of people who are authorized to come on board the ship. Stevedores, lashes and people like that. So if you are not on the list, you are not allowed. But you are never sure, sometimes. I think if a terrorist really tried to come on the ship, I would not know" (Ibid).

As Rodriguez's comments point out, the definition of what or who to look for in the work of security can never be fully articulated. In security analysts' minds,

articulating specific parameters would both inform terrorists about what to look for, and leave authorities open to the charge of discrimination. Instead, vague notions of abnormality are articulated, encouraging workers to identify, for example, "anything or anyone suspicious." This, at least, was the language provided on the 'security training' module I took on the ship's computer. Thus, risk-based programs deploy the language of risk and measurable deviation, only to exceed the limits of calculation and ask for citizens and workers to use their imagination (Salter 2008). Yet, since it is the shipping companies who bear liability and insurance risks should a terrorist attack or criminal activity occur on board, the work of risk prevention is shifted onto supply chain workers who have little direct investment in preventing threats on American soil, and yet on whom the majority of the burden of security work shifts. Oddly, there is great irony in this move, since this is the same group of workers who are criminalized and cast as a likely threat to the nation, even as their labor ensures the continuity of the circulatory system that is the focus of supply chain security in the first place.

What is striking about the ISPS code and its associated policies is that as workers are constantly denied access to jobs or mobility across the border on the basis of their level of risk to the supply chain, towers upon towers of container stacks sit in ports across the United States unmonitored. In the three US ports I visited – Los Angeles, Oakland, and Tacoma - each docking for five to eight days at a time, I saw a container security measure being implemented only once. Upon entering a US port, high-risk containers are offloaded and subjected to additional scanning procedures through a Vehicle and Cargo Inspection System (VACIS), pictured below.

Figure 11: A VACIS system in the Port of Tacoma randomly selects and scans four containers that are about to be loaded on the ship.

This usually involves halting a container that has just been unloaded from a ship, and running it past a gantry on a mobile truck equipped with X-ray technology. The technology is surprisingly rudimentary and piecemeal: a single VACIS truck is capable of scanning a single container at a time, and no other technology for scanning containers en masse has been developed.[33] More than seven million containers enter US ports every year, accounting for roughly half of the world's present inventory. Yet, of the total number of containers entering the US at any given time, officials estimate that a total of

[33] The dynamics of market competition also play a role in these decisions. Singapore, which runs arguably one of the world's most sophisticated commercial maritime terminals, does not require shipping companies to declare goods on their vessels if they are only transiting through the country's port (largely due to a fear that, if this was made mandatory, the resulting red tape would deflect trade north to Malaysia). As a result, the government does not know what is being transported on the vast bulk of carriers that transship through the city state (anonymous Ministry of Foreign Affairs officials and Raytheon and Glenn Defense Marine analysts, 2005). In 2004, only 10 percent of port facilities around the world were in compliance with ISPS stipulations. (ISPS Code Status Update 01, undated). At the time of writing in June 2018, all 148 contracting governments to the International Convention for the Safety of Life at Sea (SOLAS) are compliant with ISPS (IMO 2017).

6-7% of all containers undergo an X-ray process, with about 2% ultimately undergoing a physical search (Grillot et al. 2009, Sinai 2004).

Because the container now hides goods that used to be in the open, complete surveillance of all goods entering the US is impossible. Shippers have to declare the contents of what they ship, but these are notoriously unverifiable. The captain claims that lying about what you have shipped is par for the course to get a cheaper import duty, such that the estimated $3.8 trillion that flows through US ports is a number based on the reported, rather than actual value of imports. Ironically, then, the container, which as we have argued in chapter one was the technological innovation that most enabled the rapid growth in the volume and velocity of the supply chain, actually actively prevents the level of surveillance previously possible when goods were carried in the open in far more visible ways. Scholars who assess level of national threat argue that "containers potentially pose a serious threat to US security" because they can be used to "transport illegal weapons, chemicals, explosive materials, and even people. More likely, they can serve as receptacles for dirty bombs or other explosives that could be detonated at US seaports" (Grillot, et al. 2009, 1).

Since the container is first and foremost meant to speed transportation and lower its costs, however, the security of the state from illicit material, tanks and bombs actually becomes *secondary* to seamless circulation. Logistics is so crucial to the functioning of the global economy that it has frequently become the case, as Deborah Cowen as astutely put it, that national security "*has to work against itself"* in order to ensure trade efficiency (Cowen 2014, 71). The tensions of this strategy are crystallized in the immobility of the German captain at the Port of Oakland: Standing in front of a security

checkpoint on New Years' Day with all the requisite documentation, seeking a simple pint of beer, the captain cannot leave his ship because he bears responsibility for the surveillance documentation of his entire crew, his body policed and hailed at the border. And there were the containers that stood silently around him, holding goodness knows what – teddy bears, air, scrap steel, tanks and guns – 95% of which had not been surveilled, most likely to cross freely over the border.

When the Security and Accountability For Every Port (SAFE Port) act was passed in congress in 2006, it mandated that one hundred percent of cargo containers admitted into the United States would be scanned through inspection and radiation equipment. The original deadline for achieving this goal was July 1, 2012, but it became quickly clear that the goal would not be reached. Testifying before congress in 2010, then Secretary of Homeland Security Janet Napolitano admitted that the 100 percent maritime scanning mandate would not be met due to complex logistical and technical challenges: "With over 200 ports shipping to the United States," she said, "DHS must have a realistic strategy that facilitates legal trade" (Committee on Homeland Security 2009). More recently in 2014, DHS Secretary Jeh Johnson delivered written testimony to congress that "in all candor," he believed the department's ability to "fully comply with this unfunded mandate of 100 percent container scanning, even in the long term, is highly improbable, hugely expensive, and in our judgment, not the best use of taxpayer resources to meet this country's port security and homeland security needs" (Committee on Homeland Security 2014). DHS has now invoked three successive two-year waivers, the latest running through 2018.

On these grounds, homeland security has now turned to a strategy of risk management. A comprehensive approach would be far too '*slow.*' Instead, risk management deals with threat by managing the *consequences* of disruption by developing systems of fault tolerance, rather than on *anticipating and preventing* them. Risk management seeks not to prevent disaster, but to anticipate its damage and deal with its effects through adaptation systems only after the event has occurred, focusing scarce resources in the meantime on containers with the highest risk. This has meant that 100% container scanning, largely a threat prevention rather than risk management method, becomes supplementary. Consider what this means in comparison to the homeland security protocol one encounters at airports: While air passengers wait in line for hours at the airport to be scanned and searched, the US senate has for years now made a tacit admission that the full surveillance of all goods entering US ports is not only impossible, but *undesirable*.

IV. Risk Management

Today, risk management is widely regarded as the solution that fulfills the dual objectives of security and efficiency, rather than pitting them against each other. Risk is the art of making the seemingly incalculable subject to calculation (Aradau and van Munster 2008, 24). In post 9/11 conditions of extreme uncertainty, risk management experts claim, decision makers are no longer able to guarantee predictability, control, and security through traditional security approaches. Rather, the hidden central issue in a world "risk society" is "how to feign control over the uncontrollable" (Beck 2002, 41). The operative word in Ulrich Beck's definition here is "feign:" theorists of risk society

well understand that attempts to manage disaster are largely ideological and rooted in fantasies of control. Yet, as insurance companies experienced unprecedented losses as a result of the 9/11 attacks, organizations both public and private have sought to minimize the catastrophic outcomes of the future by seeking ways to predict risk and therefore regain economic stability in the aftermath of disaster.

The fear of disruption has a particularly spatial dimension in the logistics economy, which extends not only financially but also through densely material and physically networked infrastructures, from ports to railways, ships, and information centers. In securing the material nodes in the supply chains of capital — such as private pipelines and public transport routes — states and corporations make the movement of capital a priority in mitigating the potential threat of various forms of disruption, from bad weather to labor strikes and terrorist attacks. In the context of maritime trade, the focus of risk management is to systematically identify imports and exports that represent the greatest risk of noncompliance of customs laws and regulations, as well as the greatest risk to national security and safety. The aim of risk management techniques is to "focus limited resources" on those that pose the greatest risk of noncompliance, while designing cargo security principles that "encourage rather than impede cross-border trade" (WCO 2005). Cargo security measures put in place after 9/11 stress the importance of balancing risk with flows, recommending that "to the extent possible, customs authorities implement security procedures that do not interfere with cross-border trade flows" (WCO 2005). In this way, post 9/11 trade security measures reveal how new calculative practices of "managing vulnerabilities" arise not because they are the

most secure or thorough policies by any objective measurement, but rather because of the need to fulfill the dual objectives of trade facilitation and cargo security.

The algorithmic methods that calculate risk reveal much about the preemptive and anticipatory logics on which risk-based security systems operate. Risk management systems seek to pre-empt disaster by taking selective precautionary measures, while pursuing comprehensive disaster management only in the case of disruption. In doing so, it employs governmental techniques that mitigate the vulnerability of critical systems by "taming the future" (Aradau and van Munster 2008, 25-29). This is achieved through the deployment of risk management principles that identify and protect key assets, infrastructure and support systems, while identifying and securitizing 'high-risk' targets who might threaten such systems. By isolating only those who are most likely to threaten systems of supply, risk-based security systems "promote trade resumption policies and practices that will provide for a coordinated restoration of the movement of goods following a potential disruption" (DHS 2009).

One example of such an approach is the "Marine Cargo Catastrophe" model produced by a California-based firm called Risk Management Solutions (RMS 2016). This work involves global representations based on dynamic computational models that use geospatial analysis of ports in 43 countries to map risk exposure across the maritime world. The geographical location of vessels and cargo are mapped in relation to the prevailing security environment of that region, matching these two variables to the level of risk that a client's shipping service represents to the insurer. Shipping companies or ports that exceed an enhanced risk benchmark are then added to a list of companies that are recommended for intensified surveillance.

The algorithmic technologies employed in these geospatial models determine threat levels on the basis of financialized measures. Risk levels are calculated using the Automated Targeting System (ATS), a Homeland Security-run database that stores information on all container vessels entering and leaving the US. The system sorts the information to provide a score that will indicate if containers or vessels are a potential threat on the basis of two main variables: the financial documentation of shipping companies and the "riskiness" of countries from which the cargo originates. The first variable - financial stability - delineates categories of "trustworthiness" on the basis of the financial records of supply chain participants. The Customs-Trade Partnership Against Terrorism (C-TPAT) is one such program. It partners with government agencies across the world and with private companies, providing a list of criteria and validation protocols that, once met and maintained, singles out "safe" companies and provides them with less obstructed access to US shipping ways and trading ports (Grillot et al. 2009, 4). Companies that participate in the program thus receive a favorable reduction in their cargo's risk score when entering US ports (United Nations Conference on Trade and Development Secretariat 2003).

Although C-TPAT is cast as a program to incentivize stronger public-private cooperation, in actuality the program's use of financial documentation as a proxy for safety creates a classification system on the basis of neoliberal principles of market competition. This means that in an industry that tends towards increasing monopolization, where the four largest shipping companies own 49.7% of the total market share (UNCTAD 2017) it is effectively the largest shipping firms that attain the lowest risk scores. The TSA and DHS have said that in the event of a disruption of trade,

they will first recognize the strongest C-TPAT participants, allowing these participants to be among the first to move their cargo shipments, in effect creating a security elite. The implication is that the largest firms have more to lose if they do not actively participate in the security process, and have more incentive to carefully monitor their cargo. This once again relocates security to the private sphere, unburdening the public sphere from that responsibility.[34] In this way, adapting an argument by Stephen Graham (2005), supply chain risk-management is a "code-based technologized environment" that "continuously and invisibly [classifies], [standardizes], and [demarcates] rights, privileges, inclusions, exclusions, and mobilities" on the basis of financial indicators applied across "vast and distanciated domains" (2005, 563).

The second variable defines countries as potential sources of terrorist activity and applies those ratings to riskiness of cargo shipments themselves. In one 2007 study, supply chain management analysts from a variety of public policy centers and private consultancies took trade data from the US Maritime Administration and applied it to World Bank indicators of "failed states," understood as states where authority and governmental infrastructure has broken down considerably. As they explain: "We selected ratings based on the assumption that countries that have weak governance, high levels of internal violence, and high levels of corruption are likely sources of terrorist activity" (Haveman et al 2007, 6). The paper also builds risk scores based on military strategist Thomas Barnett's (2003) theory that the world can be divided into a "functioning core" and "non-integrating gap."

[34] I am grateful to Raymond Duvall for making this point in a previous dissertation draft.

The core comprises regions of the world in which countries basically subscribe to the same set of rules regarding globalization and are "thick with network connectivity, financial transactions, liberal media flows, and collective security" (Barnett, 2003). The "non-integrating gap" comprises regions of the world in which countries are largely disconnected from those rules and the flows of globalization. As Barnett argues, it is this disconnectedness - this 'lack' of globalization - that accompanies and is the cause of social and political ills and conflicts that are incubators of terrorists. Analyzing the trade flows from these countries that constitute the "non-integrating gap," the analysts concluded that high-risk imports from "risky countries" are more likely to land on US shores without passing through surveillance measures than are imports from "less risky" countries (Haveman et al. 2007, 13).

Taken together, these calculations of 'state failure' and 'non-integration' crystallize the colonial assumptions on which measures of risk are built. Critics of state failure have pointed both normatively and empirically to problems with the concept of state failure. Scholars have argued that state failure is wrongly understood as a domestic problem of poor political leadership rather than as one complicated by the socio-historical and political economic challenges put in place by centuries of colonialism. In fact, not only do legacies of colonial exploitation, natural resource extraction, and misplaced borders create serious limits to state-building (Chowdhury 2009), so too does the language of state failure re-invigorate colonial nostalgia by providing legal imprimatur for extended intervention into decolonized nations (Richardson 1996).

Combining calculations of state failure with a theory of 'functioning' and 'non-integrating' countries further extends these problems. When Barnett (2003) understands

globalization to be a path to liberalization and isolation as a measure of social and political conflict, he participates in a neoliberal regime of governance that displaces the responsibility for poverty and conflict away from colonial powers and onto 'failed' states, which in his estimation choose their own exclusion from the global free market. Such approaches to conflict and threat have inspired and informed the promotion and entrenchment of the now-familiar approaches to neoliberal governance that involve the remaking of state mentalities through market-based mentalities and techniques associated with free trade, privatization, financial deregulation, and the like. As Arjun Chowdhury argues, however, globalization and isolation are not always simple choices states can easily opt into or out of,[35] but are also structurally determined by long-term historical processes that raise serious barriers to state formation, where 'non-integrating' states face difficulties in "building a stable state in a structurally unfavorable environment" (Chowdhury 2009, 638). Ultimately, by making distinctions between those who deserve privileged status in the supply chain and those who do not on the basis of flawed indicators of economic wellbeing and global integration, supply chain security reveals itself to repeat older logics of orientalist thinking by assigning labels of danger and threat to the Global South. Under supply chain security, however, colonial representation has been replaced by neoliberal market-based measures and calculative regimes of social sorting. Risk assessments that are built on these problematic indicators underscore how supply chain security exacerbates already-existing variations in access to trade, actively

[35] By making this statement, I do not mean to deny agency to some revolutionary regimes (such as Cuba) that have been able to make some choices about their partial withdrawal from systems of global capitalism; however, I am suggesting that the historical conditions of colonialism and capitalism produce structural constraints, which the discourse of state failure does not acknowledge.

contributing to the uneven geographies of capitalism through the iterative incorporation and expulsion of firms, workers, and spaces into and from global circuits.

Finally, risk calculation is a fundamentally depoliticizing tactic. Because the priority of risk management is to secure the continuity of the supply chain at all cost, risk models flatten the political differences and social causes of what it labels as 'security threats,' construing all disruptions from natural disaster to labor stoppages as sources of alarm no matter their motivation. In risk models, varying causes of disruption are rid of their social content: long-established risks such a natural hazards, earthquakes, and labor disputes are placed side by side with the 'new risks' of terrorism in an effort to produce rigorous insurance data that quantify, manage and transfer risks for firms scanning the world for investment opportunities.[36]

It is notable that the principal goal of these models is to aid insurance calculations and actuarial investment. The rise of risk management systems can be linked to insurance companies' need for better actuarial data. To operationalize insurance rates, insurance companies identify levels of risk by making calculated bets on the likelihood of disaster, effectively *embracing* risk as "a reaction to the inability of the insurance state to effectively spread loss" (Baker 2002, 351). In turn, the state's move to employ risk management as a counter-terrorist strategy supplements the *embrace* of risk with a different logic premised on the *preemptive* knowledge that catastrophic futures both cannot be anticipated and are uncontrollable.

[36] http://www.rms.com/newsroom/press-releases/press-detail/2016-03-31/rms-releases-new-report-on-marine-risk-and-modeling

As Claudia Aradau and Rens Van Munster (2008) have astutely argued, whereas the politics of actuarial risk is based on minimizing private losses through a prudential calculation of risk likelihoods, precautionary risk understands that insurance cannot actually prevent dangerous occurrences from happening (2008, 28). Insurance can facilitate the financial protection of individual companies and ships traveling the world through actuarial claims and adjustments, but it cannot secure the economic wellbeing of the nation, nor the global circulation of trade upon which the national economy depends.[37] As a result, risk-based security systems produce risk estimations in full recognition that these techniques of calculation are ultimately inadequate for dealing with the uncertainty of future events.

Put differently, since one cannot predict the full extent of coming disasters, one can only seek to mitigate their effects by making anticipatory decisions rather than deal with aftermaths. Scholars of risk argue that such visions of a disastrous future about to unfold lead to depoliticized imperatives to stop *potential* threats at all costs (Amoore and De Goede 2008; Aradau and Rens van Munster 2008). This chapter argues that a crucial addendum must be added: risk-based security systems seek to stop potential threats, *provided that they do not disrupt the circulation of global capital*. The tension between managing threats while safeguarding circulation thus legitimizes the encroachment of surveillance technologies and policing into spaces of political enactment that are increasingly seen as sources of potential threat, creating justifications for the preemptive targeting and disruption of everyday life, while placing demands on those same subjects to facilitate trade circulation.

[37] For a counter-argument, see Lobo Guerrero 2008.

This embrace of precautionary risk is especially visible when the state, following the lead of corporate risk management, treats workers' assertions of their rights as a source of potential emergency. This is especially clear in increased efforts to police the movement of dockworkers and other transportation sector workers after 9/11. Over the last two decades, as the DHS has made extensive explorations of the vulnerability of US critical infrastructure to disruption from various sources of threat, transport corridors have been cast as essential critical infrastructure. Accordingly, the workers who are essential to the smooth functioning of these corridors have come under intense scrutiny as potential sources of economic disruption.

The majority of this chapter has been spent on examining how counter-terrorist efforts at the maritime border have been recast within the context of supply chain security. However, in the view of terminal operators and Customs and Border Patrol, it is not terrorist attacks that have caused the largest disruptions to US ports in the last two decades, but labor disruption by the International Longshore and Warehousing Union (ILWU). In 2002, as the ILWU was engaging in contract negotiations, the Pacific Maritime Association (PMU), which represents major shipping lines and port terminal operators, engaged in a 10-day lockout of all 29 West Coast ports, charging that the ILWU had coordinated work slowdowns at a number of ports. The ILWU in turn denied these allegations, asserting that intensified levels of speedup in commercial trade was causing a strain on their workers' capacities, and called the PMA's tactics "adding insult to injury" (Isidore 2002). Interestingly, although this labor dispute has nothing to do with counter-terrorism, supply chain experts from public universities to the RAND Corporation frequently employ it as the primary example to illustrate the effects of

economic disruption at key chokepoints in the global supply chain. One RAND report stopped just short of calling longshore slowdowns a form of terrorism. Estimating that the immediate and latent effects from a terrorist attack on a container supply chain could lead to a global recession, the RAND report proceeded to supply an example through the lockout:

> "The west-coast port lockout of 2002 suggested the magnitude of economic effects a terrorist-related event might cause. From September 27 to October 9, 2002, port owners and operators locked the gates of their facilities along the U.S. West Coast, shutting them down for business. The ports on the U.S. West Coast are critical to U.S. trade: the ports of Los Angeles and Long Beach are the entry point for over 40 percent of U.S.-bound containers; terminals in Washington handle approximately 42 percent of that state's maritime imports and exports by value. The lockout disrupted the itineraries of more than 200 ships carrying 300,000 containers, resulting in cargo delays, costly diversions to alternative ports, and unemployment lines as businesses laid off workers and cut production. The cost to the U.S. economy—in the form of delayed shipments and business disruptions—has been estimated to range from $450 million to several billion dollars; the subsequent effort to clear freight backlogs is thought to have removed between 0.4 and 1.1 percent of nominal GDP from prominent Asian exporters, including Hong Kong, Malaysia, and Singapore."

Through the frame of risk, domestic problems such as labor disputes become international problems of supply chain management. This once again underscores this chapter's argument that cargo security policies aimed at safeguarding trade flows within the US are simultaneously deeply connected to global supply chain flows internationally.

The uncertainty of longshore disruptions - and more specifically, the economic implications of this uncertainty - has been materialized by the state into institutional infrastructures of risk management and mitigation. The West Coast lockout in fact led to the invocation of the Taft-Hartley act, which allowed President George W. Bush to

suspend the shutdown for 80 days on the grounds of emergency provisions, citing the fact that the operation of the ports is "vital to our economy and to our military" (Sanger 2002, n.p.). At stake in these extraordinary measures to suppress labor negotiations is the way in which working peoples' interruption of commodity flows are depoliticized as a matter of economic crisis, rather than as a matter of the assertion of labor rights. Ultimately, the growth of risk management techniques normalizes the depoliticization of working class struggles, inviting military and invasive modes of operability in efforts to neutralize emergent threats. "Rather than acting in the present to avoid an occurrence in the future," writes Brian Massumi, "pre-emption brings the future into the present. It makes present the future consequences of an eventuality that may or may not occur, indifferent to its actual occurrence" (2005, 7-8).

In fact, security policy framings of labor disputes as forms of risk have been used to justify new forms of regulation that disproportionately adversely affect the working class. Although it was instituted as an ostensible risk prevention strategy, the Transport Worker Identification Credential (TWIC) implemented in 2007 effectively subjects workers' movements to intensified levels of scrutiny by a combination of state and private actors, seeking to sort those deemed 'dangerous' from those deemed worthy of work. As Cowen (2014, 93) argues, the TWIC "rewrites the limits of state surveillance and supplants labor protections, but it does so without presenting itself as labor law."

The TWIC is a biometric identification card that assumes that stronger control of workers' movements into and out of ports targets a key link that can potentially threaten the transportation of cargo. The TWIC requires all stevedores, longshoremen and other port personnel to undergo detailed background searches and invasive security screenings

before being granted access to the port. On the basis of these background checks, the program denies authorization to workers who are considered to be "security risks," on the basis of state suspicion of their activity. The threat assessments include criminal, immigration, and intelligence / background checks, during which workers can be denied security clearance on a permanent basis if they have been convicted for serious crime, even if they have already served their time and now have clean records. However, this list of criminal activity that provides grounds for dismissal is so open to interpretation - for example, "attempt to improperly transport a hazardous material" or "attempt to commit a crime involving a security transportation incident" (CBP 2017) - that of the estimated 1.2 million port workers who are required to register for the TWIC program (, the ILWU estimates that the Transport and Security Administration (TSA) estimates affects 1. transport workers across the US (Berman 2013)

Most critically, workers without immigration papers are also ineligible to attain a TWIC card, affecting the estimated 20-50 percent of port truckers who are undocumented immigrants. Considering that the basis of such biometric systems are rooted in governmental techniques that discriminate between 'trustworthy' workers and 'untrustworthy' criminals and aliens on the basis of racialized and class-based determinations of exclusion (Magnet 2011), and conflate criminal activity with terrorist activity, the TWIC card exhibits the tendency of supply chain security to target working populations even amidst overwhelming evidence that such surveillance policies are an ineffective way to combat cargo security threats. On the basis of governing the 'integrity' of the supply chain, the ISPS code creates a security regime in which attempts to safeguard goods is prioritized over the mobility of workers whose livelihoods depend on

the supply chain. As Deborah Cowen has put it, the TWIC protocol suggests "an intensification of the territorial bounds on human mobility at the same time that those same boundaries are recast to facilitate the flow of goods" (2014, 119).

Notably, the TWIC program, while spearheaded by the Transportation Security Administration, is actually administered by one of the world's largest defense contractors, Lockheed Martin. While Lockheed Martin apparently won the contract through a competitive bidding process, the company reported spending $16 million on lobbying in 2008, and has had a long history of administering varying state and military defense programs (ILWU 2009). The contracting out of the security state to corporations does not end there. Lockheed Martin, in turn, subcontracts the TWIC program to Deloitte Consulting, who in turn subcontracts the staffing of TWIC offices with Kelly Government Services, one of the leading firms in the temporary employment industry that has "deliberately and strenuously worked against government regulators, unions and public opinion to divest business of its investment in permanent employees" (Hatton 2011).

In multiple ways, then, the public-private partnerships that are developed as an explicit focus of national supply chain security strategies undermine employment standards for workers situated up and down the supply chain. These moves underscore the neoliberalization of national security, where state practices organized in the idealized image of the capitalist market not only refashion state control around the liberalization of trade, but also conform to logics of economic instrumentality that are built on the exclusion and undermining of workers.

The TWIC program articulates a fundamental attribute of security that protects circulation. Although longshore workers are crucial to the functioning of the very economic flows on which the state depends, they are simultaneously treated as potentially transgressive and threatening presences. Since internal enemies are potential and everywhere in the discourse of terrorism, to protect those within or contain them, or to protect those outside who might be disturbed, at risk or endangered by exposure, were not mutually exclusive projects. As Ann Laura Stoler (2016, 118) has argued, "being 'at risk' and 'a risk' is a fuzzier political line than most histories of policing and containment allow us to imagine."

We should not, however, overstate the success of such security programs in attempting to balance the goals of security and efficiency. Despite numerous experiments with security programs that can simultaneously safeguard trade flows and control the border, the DHS has encountered roadblocks with the successful implementation of these strategies. In a Government Accountability Office (GAO) report evaluating the impact of TWIC program implementation on the flow of commerce, the GAO found that despite costing the federal government and private sector a total of $420 million (and a projected $3.2 billion over 10 years), the TWIC program experienced "challenges related to pilot planning, data collection, and reporting" which affected the "completeness, accuracy, and reliability of the results" (GAO 2013, 13) and produced no concrete findings on whether the TWIC program had effectively aided commerce flows or enhanced port security. The tensions suggested by the bumpy implementation and unclear outcomes of the program point to the discrepancies between the imaginary of the well-struck balance between

security and efficiency so espoused by the DHS, and the tensions encountered in its implementation.

Conclusion

I have argued in this chapter that the timely circulation of goods, services, information, resources, and energy through territory is critical to capitalism today, rendering acute the problem of blockades, work stoppages, and other forms of disruption for the state. As just-in-time and on demand commodity production has increasingly re-organized political economic space through the architecture of logistics, security and efficiency are no longer at odds with each other as opposing logics of border stoppage versus border flows, but rather are united by a shared political-economic imperative to ensure the circuitry of vital systems networks. In the process, supply chain security reshapes state cartographies through the formulation of liquid borders that expand the state's spatial ambit for surveillance, while employing risk management methods to anticipate disruptions. In doing so, they form tighter bonds with private corporations in a shared goal that privileges the continued circulation of goods and capital over the welfare of populations. This is especially evident in the assaults on labor along the supply chain as workers become both the subject and enactors of supply chain security protocol. The new political and socio-temporal imperatives to aid the logistics economy have thus led to shifts in risk evaluation, management, and mitigation practices of state administration, in cooperation with the private sector, to neutralize worker disruption to supply chain infrastructures.

Perhaps one might argue that this privileging of commercial over human flows is nothing new. Scholars such as Mark Salter (2008) and Didier Bigo (2001) have shown in their work that in an era of mobility, borders now operate not as fortresses, but to "channel and monitor flows." What this chapter seeks to underscore, however, is that the age of logistics has brought about an unprecedented intensification of this relationship between security and mobility. While 9/11 was not the only instance in which the tightened borders of the state presented a challenge to capital mobility, it is a significant event that shifted contemporary security policy toward attempts to resolve the tensions between strict border policing and smooth trade. Only in the recognition of this tension did supply chain security become a salient model.

In the introduction to the U.S. National Strategy for Global Supply Chain Security (DHS 2012, 1), President Obama explained, "We reject the false choice between security and efficiency and firmly believe that we can promote economic growth while protecting our core values as a nation and as a people." This statement encapsulates a core insight - one that continues into the current Trump administration. Despite reinvigorated calls for the construction and refortification of walls, fences, and borders, the United States' integral and increasing reliance on the stability of the global supply chain underscores this chapter's proposition. Security and mobility are not in tension with one another, but actually serve a singular purpose: the protection of trade flows *in conjunction with* the policing of the movement of people.

Here, I return to Foucault's conception of circulation to ground the final analysis. In his insistence that security is a *function* of the circulatory imperative rather than its antithesis, Foucault underscores the fact that a general economy of power, determined by

circulatory range of "things, events, and elements," arises around the reason of the state (Foucault 2007: 19). As disruptions to commercial circulation become a threat to the state, they become an object of government and extend beyond federal powers: since states pursue the domestic policing of populations in recognition that these security measures intersect with the circulation of the totality of the global supply chain, domestic forms of governmentally become in effect internationalized, extending both through the reverberations of local effects and through the insistence that other countries adopt the same measures of threat prevention.

Foucault would go on further to say: "it is in terms of this option of circulation, that we should understand the word freedom, and understand it as one of the facets or dimensions of the deployment of apparatuses of security" (2007: 49). As he explains, a general economy of power that relies on the freedom of circulation aims to apply economic knowledge as the instrument through which society can be controlled, and through which it can flourish. Security, in other words, retains the "freedom" of circulation and flow as a necessary means for its operation, which ultimately produces the population as the collective subject of a particular kind of freedom – the freedom obtained through a market economy, and through a market rationality. In the process, mechanisms of security create the conditions of possibility for the production of liberalism's central tenet of freedom, which in turn create the ever-increasing demand for security. In a recursive way, the governmental organization of circulation in turn produces new forms of threat and danger, where "individuals are conditioned to experience their situation, their life, their present, and their future as containing danger" which threatens the society's putative freedom (Foucault 2008: 66).

This equation of the aggregate economic growth supposedly guaranteed by the supply chain with the wellbeing of the population relies on an approach to risk and vulnerability that sorts the world's population into high or low threat levels on the basis of their mobility in the supply chain. Risk systems employ calculative measures through which economically stable actors within the supply chain are given 'fast-track' status, while placing heavy restrictions on those who cannot maintain steady levels of trade and are thus deemed 'high risk'. Risk management strategies thus imperil particularly vulnerable sections of the population, while simultaneously casting its role as the protector of the overall vulnerability of the *general* population. Foucault's understanding of circulation thus emphasizes that what safeguards the population from risk is not the protection of the most vulnerable but the protection of circulation as the fount of economic wellbeing. And because wellbeing is understood in the aggregate, the constriction and policing of human mobility is paradoxically framed as a strategy to ensure their wellbeing.

This chapter has offered a sketch of the strategies mobilized in the making of a supply chain security regime, taking seriously the proliferation of juridical, spatial, and market-based policies that enact systems privileging the flow of goods over the circulation of people. This analysis does not, of course, seek to offer a comprehensive assessment of transformations to border security practices in the context of a logistics economy. My focus on the maritime border seeks to isolate one gateway in the supply chain where securing the subject in favor of the movement of capital is rendered particularly urgent. Because the most visible border to the majority of those with class privilege is the airport terminal, the fact and thematic of border closure is often

understood in terms of capture, domination, containment and privacy violations that encode traveling bodies through the violence of border monitoring. Much less visible to us is the fact that borders have become hubs for the workaday circulation of goods at a global level, and are thus controlled through a more modulated regulation of key flows and processes than is immediately visible. If I have only focused on one nodal point in a much broader complex of the global supply chain, it is not because the maritime border is the only site in which the movement of capital is secured, but because it offers a distinctive articulation of the manner in which states and corporations experiment with the sustenance of particular forms of logistical life, reshaping what it means to govern the circulation of populations.

Chapter 3.
Monstrous Infrastructure: Megaships, Megaports, and the Logistics Landscape

Introduction

Within the past four years, triumphant declarations claiming the title of the 'World's Largest Ship" have surfaced six times. First in 2013, AP Moller Maersk launched the first of twenty Triple-E class megaships, vessels with a maximum capacity of 18,000 TEU (twenty-foot equivalent units). "The Triple-E," then-CEO Eivind Kolding declared, "will be the biggest ships you will see for some time" (World Maritime News 2013). Less than a year later, China Shipping Container Lines (CSCL) announced the "new big dog in town" - the CSCL Globe, a 19,100 TEU behemoth launched in November 2014 (Schuler 2014). This too was short-lived. A month later, the Mediterranean Shipping Company ordered a 19, 224 TEU ship (Yang 2014), followed thereafter by Maersk, COSCO and Evergreen shipping lines with 20, 000 TEU orders, after which OOCL made a record-breaking order of six 21, 000 TEU ships, the largest ships ordered to date (Yang 2014, World Maritime News 2015, Port Technology 2015a, Port Technology 2015b). This will not be the case for long. A number of shipyards are offering 22, 000 TEU builds, and CSCL is currently examining the feasibility of building 24, 000 TEU vessels. To provide these numbers with a sense of scale, a single 18, 000 TEU ship can carry 864 million bananas, while a 24,000 TEU ship can hold 1.1 billion bananas: one for every person in the United States and on the continent of Europe combined. It is unclear at which point the physical limits of engineering will meet the monstrous ambition of ship owners.

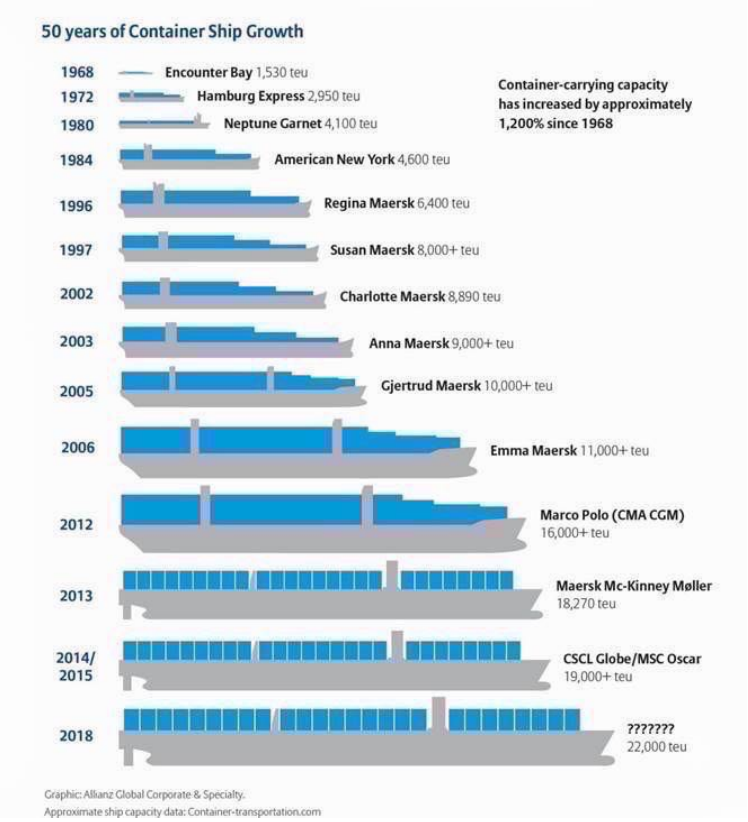

Table 2: Container ship size comparisons, 1968-2018. Source: Allianz Global Corporate and Specialty

"The problem with the industry", the captain tells me as we sip on tepid instant coffee at breakfast, "is that everyone wants to build bigger and bigger ships. They cannot stop themselves. One builds a big ship, the other wants to catch up. On and on it goes" (*Ever Cthulhu* Captain, name anonymized per IRB regulations, personal communication, January 5, 2015). We have just returned from a morning walk around the ship, my first full tour of the vessel. To give me a sense of the ship's size, the captain has led me down into the hold 80 feet below deck, up and down the ladders and walkways nested between the container stacks, and around the ship's circumference. Flanked on one side by towering steel containers that scrape against each other in the wind, and on the other by

the infinite expanse of sea unfurling beyond the guardrails, I cannot stop marveling that this 101,000 ton piece of steel the size of the empire state building is not only keeping us afloat, but surging across the ocean at 24 knots an hour. When it was launched in 2006, the *Ever Cthulhu* would have bowled the industry over as one of the largest ships in operation. Yet, less than ten years after it began sailing the seas, the ship has become unremarkable. A few months after it was launched, Maersk Lines introduced the *Emma Maersk*, a ship with a capacity almost twice the *Ever Cthulhu*'s at 15, 500 TEU. Today, the *Ever Cthulhu* is considered only an average carrier, dwarfed by vessels almost three times its carrying capacity.

"It's a self-made crisis, really", says the captain, shaking his head. The more megaships grow, the more megaports must be built to service them. In the fifty years since the world's first container ship *Encounter Bay* (1,500+ TEU) set sail from Rotterdam in 1968, container-carrying capacities have increased by 1200%, and in the last ten years alone, by 80%. Megaships of 18,000 TEU and above have come to dominate the shipping industry with a startling rapidity. While the economies of scale provided by larger ships seem obviously beneficial from the perspective of an individual company seeking to lower its costs, this is much less the case for the industry as a whole: as the rush of megaships bloat the global shipping fleet, they exacerbate overcapacity, where the total cargo space available on all the world's ships far exceeds the trade volumes they would help transport. In addition, ports are frequently confronted with the need to make heavy infrastructural adaptation to support the new peaks in volume that come in ever-larger waves to the container yard. None of these factors seem to deter

shipping companies: the race to build the largest ship continues, exacerbating the problem of overcapacity as it does so.

In this chapter the question I seek to ask is not primarily a causal one, such as 'why does the shipping industry seems to be shooting itself in the foot by building bigger and bigger ships?' Rather, this chapter poses a question more attentive to the spatial scale and scope of dispossession entailed by such large-scale infrastructural expansion: What are the spatial, social, and political effects of the monstrous scale of infrastructural expansion? And what does the scale of these projects tell us about capital's imperative to expand value accumulation through the construction of a global logistics space? Although providing an account of the logics underpinning ship expansion is part of the chapter's aim, neither neoclassical theories of a self-adjusting universal market mechanism, nor Marxian theories that focus exclusively on the operations of capital, adequately explain the paradox of megaship overcapacity, where firm-level decisions to capture economies of scale produce industry-wide infrastructural problems that impact the state, displacing the risks of over-expansion onto vulnerable populations.

As corporations over-invest in the expansion of their shipping fleet carrying capacities, another form of infrastructural expansion is also demanded in the adaptation of port infrastructures, which are often funded by federal and municipal taxes. This means that while the ownership of the means of circulation are privatized, the risks of over-investment are socialized, and come to be borne by society at large in contested and uneven ways. Rather than follow the neoclassic economic logic that megaship expansions are built on the logic of economies of scale, this chapter suggests that private infrastructure expansion cannot be explained in isolation from broader shifts in the way

the logistics economy is organized, and in the way the state participates in facilitating the circulation, production, and consumption of commercial capital.

As such, I propose the following argument: Both state and corporate projects to expand the scale of logistics infrastructure are materialized bets on the durability of capital accumulation. As the state-capital nexus seeks to build this durable future, facilitating the expanded reproduction of capital through the growth of global logistics space, these infrastructures become burdens on the public that spatially fix concrete spaces of transit through contested and uneven processes of rescaling and dispossession. As such, it becomes important to understand the expansion of logistical infrastructure not only in terms of the physical system of circulation it enables, but also in terms of the irrational rationalities that these obsessions with monstrous expansion entail. Interrogating the interface between massive expansion of both megaships and megaports, I argue that the material systems of global supply can be understand not only as durable infrastructure - public works that stimulate local and global economic growth - but as unendurable monstrosities that imprint the violence of global circulation onto the lived spaces of populations vulnerable or precarious to the displacements and dispossession that such infrastructural expansion produce in their wake. The co-dependency of one monstrous infrastructure (the megaship) on another (the megaport) unevenly distributes violent political effects beyond the port itself, especially into spaces and populations in the global South who supply the raw materials and cheap labor for such undertakings.

In this chapter, I use the term "vulnerable populations" as a way to refer to the diverse working classes, precarious lives, racialized populations, and ordinary people whose spatial and social mobility become subject to the demands of logistical flow. I

choose the term to connote a general condition of susceptibility to harm under logistics, not because I wish to avoid specificity, but precisely because this chapter proposes that the interdependence of contemporary capitalist economies extend logistics' effects beyond specific sectors of the transportation working classes and beyond demarcated geographies. Vulnerable populations do not lack agency. However, they are subject to uneven power relations that are intensified by the networked structure of logistics. In this sense, I think of vulnerability not in existential terms but through a materialist lens, where, following Judith Butler, (2012, 141) I understand vulnerability to be to a large extent "dependent upon the organization of economic and social relationships, the presence or absence of sustaining infrastructures and social and political institutions." In expanding the networked infrastructures of commerce globally, logistics is an arrangement and mobilization of infrastructural violence that exacerbates and reproduces uneven relations of power.

To illustrate this point I look at two examples of the expansion of port infrastructure across the Pacific; first the Alameda Corridor rail project in Los Angeles, and second, land reclamation practices in the expansion of the Port of Singapore. Both cases suggest that as the risks of infrastructural over-investment are socialized, these risks are distributed unevenly along the lines of material and class inequality on a transnational scale. Often left unexamined in an emerging scholarly interest in large-scale geo-engineering projects is the question of what is removed or lost in these acts of sovereign and capital making - which, in the creation of spaces for the movement of capital, require concomitant acts of extraction, erasure, and dispossession. If monstrosity is the tendency of logistical expansion, I examine the minute forms of spatial injustice which enable and

produce these logistical infrastructures. Thus, in tracing a path from monstrous infrastructure down to more grounded levels of its spatial and social effects, the broad aim of this chapter is to illustrate an analysis that seeks to understand the totality of the circuits of production, circulation and consumption through an infrastructural approach to capital accumulation - that is, through an analysis of the "underlying framework[s] of a system" more attentive to the lived textures of dispossession that are not immediately obvious in more structuralist approaches to capital accumulation (Fischman 2012, 4; Rubenstein 2010, Star 1999).

I. "It's an Arms Race": Neoclassical Logics of Monstrous Expansion

At first blush, neoclassical economic rationales for the megaship boom seem to make sense: Since the international standardization of the shipping container, ships have sought to increase in size to capture economies of scale. As seen in Figure 1 above, ship sizes have gradually expanded since the first trans-oceanic voyage of *Encounter Bay* in 1968. While the largest shipping liners have experimented with increasing their carrying capacities for decades, it was not until the global financial crisis in 2008 that megaships were produced in high numbers. At the height of the financial crisis, freight rates (the slot costs per container transported) plummeted along with global trade volumes (Morris 2015). Shipbuilding orders were cancelled in droves, leaving half-built ships stranded in yards all over South Korea and China. When orders finally picked up again in 2010 and 2011, companies knew that they had to cut costs. Pushed along by weak freight rates and rising fuel costs, many shipping lines concluded that the most cost-effective solution was megaships, which, by expanding the number of containers transported per vessel, could

lower the costs of transporting each container by leveraging economies of scale. The larger shipping companies who could afford these costly investments began to place orders in bulk.[38] Maersk first set the trend with 20 18,000 TEU Triple-E class ships, ordered in 2011. Two years later, other shipping companies followed suit, suitably convinced of the competitive advantage of these behemoths.

Building bigger vessels allows ship owners to capture economies of scale in fuel and crew costs, allowing them to lower the unit costs per container and restore profitability through cost-saving measures. If a single mega-vessel can now carry what it used to take 3 ships to transport, fuel costs can be cut by as much as 50%, and crew sizes might be reduced by almost half. By way of comparison, according to International Transport Federation regulations, the minimum crew size required to man an 8,100 TEU ship such as the *Ever Cthulhu* is 22. The number of crew required on a ship with three times that carrying capacity is a mere 28. These cost-cutting measures have been crucial for the profit maximizing strategies of larger container lines such as Maersk: since their super-post-Panamax ships have launched, their freight costs have gone down from $3108 per TEU in 2011, to $2630 today (Drewry Maritime Research 2014). In micro-economic terms, these cost-saving measures allow larger corporations to capture the market share of global container capacity. For individual carriers, then, the rationale for ordering bigger, more technologically advanced and fuel efficient ships is based on competitive dynamics at the firm level: the bigger the ships and the larger the proportion of the fleet comprised of them, the greater the ability to edge out competitors by lowering slot costs.

[38] For example, Hyundai Heavy Industries reports that since 2010, it has built 82 ships of more than 10,000 TEU but has received orders for only five ships in the 5,000 TEU range (Morris 2015).

In accordance with such calculations, the scramble to order megaships has escalated since 2011. Ninety-seven ships capable of carrying between 18,000 and 20,000 20-foot-equivalent container units are scheduled to be delivered to various companies by mid-2019, crowding an already-large global fleet of megaships with more orders of even larger container vessels.

At an industry-wide level, these calculations quickly begin to meet with wider problems. In the last few years, companies have supplied so many vessels that hundreds of behemoth ships have come into service at the same time, making it difficult for carriers to match demand with burgeoning supply. Since the 2008 financial crisis, trade volumes have not recovered sufficiently, and returns on capital have remained low, resulting in many empty ships traveling across the ocean while filled with far less than their projected maximum loads, resulting in what the industry terms 'overcapacity' (Maritime Executive Staff 2015). Overcapacity poses a supply-side challenge for the shipping industry: with ships traveling only half-filled on their designated routes, the fuel and slot cost savings these large ships were designed for are largely cancelled out, forcing companies to drive down their freight rates. In September 2015, freight rates dropped 59% to an all-time low of an average $313 per twenty-foot container. Even with this price competition, ship-owners have failed to fill their megaships with the number of containers that would justify their projected economies of scale. In 2015, Maersk, the largest shipping company in the world, reported a $600 million shortfall in their full-year profit forecast, nearing a 50% fall in profits from 2014.

Considered in terms of the wider industry, the megaship arms race begins to meet its internal contradictions in its inability to meet its own projected outcomes. According

to some analysts, low freight demand, overcapacity problems, and the consequent tightening of profit margins led to the top four carriers sustaining a cumulative loss of $3.5 billion in 2017 (Milne 2018). Trade volumes have risen at such a slow pace that they have not justified the high expenditure on megaships. In fact, overcapacity has only exacerbated the problem of slow growth. Multiple maritime analysts have argued that trade volumes must rise before the container line market continues to be flooded with monstrous ships. With overcapacity projected to hit 8-10% by 2018, the highest since the financial crisis in 2008, analysts' forecasted for balancing trade volumes have generally been cautious.

In the ideal outcome that these container lines picture, ships would be fully loaded and constantly circulating the ocean. Yet, in the current climate, many ships are idled, and kept out of service at anchor for a month and beyond because there is not enough volume to put the ships in service- and bear the crew, fuel, and docking costs which that requires. In November 2015, the reported laid-up cellular capacity was almost past the million-TEU watershed: 263 container ships were reported idled, totaling 934,700 TEU and representing 4.7% of the total global fleet. Conspicuously, this list included one Maersk line Triple-E 18, 000 TEU vessel, scheduled to be at anchor for six weeks on break from its Asia-Europe route (Wackett 2015). Idling a massive megaship - just two years ago, the largest in the world - evidences how serious the situation of oversupply has become. Carriers typically endeavor to keep their largest ships and therefore most expensive assets active; an idling megaship suggests that desperate situations have called for desperate measures. Carriers thus face a dilemma: without using the newest and largest ships to lower operational costs, they risk losing business; but by investing in a

state-of-the-art fleet, they exacerbate a supply glut and poor freight earnings and are now struggling to stay afloat. As one shipping analyst confided in an interview, "Flooding the market with additional capacity is counterintuitive, and I believe all shipping lines know that. Unfortunately, it has become a case of 'you are damned if you don't, you are damned if you do'. Everyone is trying to play catch up" (Bill Hatch, personal interview, conducted March 20 2015, Singapore).

The process by which capitalists, as a class, invest in logics of unmitigated expansion with little consideration of broader structural impacts begs investigation. Shipping experts frequently rely on rhetorics of assurance to indicate their simultaneous faith in and uncertainty about the future of accumulation. For instance, Maersk executive Nils Madsen responded to my question of why the company continues to build larger ships amidst industry-wide overcapacity with this assurance: "There's a lot of projections involved. If I can come up and I can fill a triple-E, my unit cost is going to kill the competition. I'm going to be almost 30% cheaper per container than they can be with their small 13 or 14,000 TEU vessel" (Nils Madsen, personal interview, conducted March 27 2015, Singapore). I countered: "But how do you project that these ships will be filled at 100% capacity? In an overcapacity environment where trade volumes do not match the available cargo space, isn't this practically impossible?" Madsen responded: "Well, you don't know. You hope. There's a bit of hope in it. Of course we try to read the economic numbers, and well, the world economy seems to be growing, no matter what happens. If it grows 2%, then in principle, you need to grow your fleet by 2% just to maintain your own market share. If you want to actually grow, your fleet has to grow by 4%. So we keep growing our fleet." These speculations posit an optimistic future built on loose

assumptions about economic growth, where economic projections are rhetorically depicted more as fortune telling than as rational calculation.

Madsen made no admission that the mad rush to build megaships could be the precise cause and exacerbation of a coming shipping crisis. Rather, he proudly owned the fact that Maersk has continuously set the precedent for larger ships in the industry:

> M: What you're going to see is if we order triple Es, soon everybody orders triple Es.
> C: Right. COSCO copied, UAC copied.
> M: And, when they do that, then we have to respond.
> C: By ordering more…
> N: More, or bigger.

In October 2015, Maersk CEO Nils Anderson reaffirmed this logic of competition: "We don't want other companies to leapfrog us and to be more aggressive on investments, so we are going to defend our market-leading position" (Ellayatt 2015). Such logics of defense against 'leapfrogging' suggest that the shipping logistics industry, like many others, frequently justifies its infrastructural investments in terms of firm-level decisions to defend against industry competition. Projections of megaship growth are often made on the basis of maintaining market share, and on the assumption that trade volumes will continue to grow. In this way, a core component of the logic of megaship expansion is a speculative bet on the future of capital accumulation.

Between January and November 2015, a rhetorical shift in the maritime journal coverage of megaships became evident: extolling the virtues of "efficiency" and "improved economies of scale", coupled with celebratory descriptions of grand opening ceremonies turned slowly to an uncertain pallor of worry over increasing overcapacity and slowing trade. By October, when the economic impacts of overcapacity became

increasingly apparent, the glorification of megaships quickly turned to a rhetoric of helplessness in the face of an inevitable global shipping slump. The prevailing wisdom that "bigger ships are the new reality" has been largely unquestioned. Insisting that megaships are here to stay, journals have quickly turned to the question of how to handle the problem, without asking why the problem has arisen in the first place. For example, the Port of Long Beach Chief Commercial Officer Noel Hacegaba professed that the goal "is to find the means to turn these challenges into opportunities" for the "evolution of our port", rather than to challenge the logics from which these material conditions have arisen in the first place (Hacegaba 2014). Likewise, from the perspective of a container line executive such as Michael White, president of Maersk North America, the accusation that shipping lines are exacerbating delays at ports unfairly places responsibility on ship-owners: "Sometimes we're quick to point fingers or assess blame in certain areas about difficult challenges we face, rather than collectively coming together to find solutions," he said. "The big ships are coming. They're no surprise. They didn't sneak up on us. We've been talking about them for years…big container ships are necessary and here to stay, so marine terminals, ocean carriers and cargo interests must cooperate to avoid logjams at ports" (Bonney 2015).[39]

It would not be long until the consequences of this oversupply problem became visible in an unprecedented disruption in the shipping industry. Recall that in the

[39] Michael White's reference to avoiding logjams at ports does not necessarily contradict the overcapacity problem. He is pointing to bottlenecks that result from oversized container vessels unloading more containers at one time on the dock. Given that container capacities have increased by 79% in just seven years, portside technologies, mechanized equipment, crane sizes, and other docking equipment have to be updated so as to be able to adjust to higher container volumes that need to be unloaded in a timely manner. The problem White identifies continues to be a problem for ports even if ocean lines are experiencing overcapacity problems, since even empty containers are usually unloaded from these ships.

introduction to this dissertation, I began with Hanjin shipping line's bankruptcy. In August 2016, the structural conditions of over-supply produced the largest bankruptcy in container shipping history when the world's seventh largest shipping liner, Hanjin Shipping, filed for bankruptcy in South Korea. Hanjin handled roughly 7% of all US-Asia cargo. With its profit margins severely affected by depressed freight rates, Hanjin had gained $5.4 billion in debt, and was unable to shoulder the docking, fueling, and crewing costs for its 85-ship fleet, leading to the disruption of over $14.5 billion dollars in trade. Although there have been numerous mergers and acquisitions in the shipping industry since 2008, the Hanjin bankruptcy is a significant indication of how the over-supply problem had reached a tipping point. In the aftermath of Hanjin's bankruptcy, maritime research analysts and financial firms continue to suggest that the global shipping outlook for 2018 remains negative (Lloyds 2017).

In fact, ports worldwide are only just beginning to understand the impact of this growing presence of mega-ships. Terminals originally built to discharge cargo from an earlier era of ship sizes (5,000 TEUs and below) are now struggling to handle cargo from ships that in 2005, had twice, and now in 2018, four times those carrying capacities. In a 2016 report by the International Transport Forum, researchers found that the average vessel has increased by 79% in size over 2007-2014 (Dynamar 2015), concentrating ports into a hub and spoke-network, consisting of a limited number of large ports that can support main intercontinental trade lanes, with smaller feeder ports connected to these larger ports. For example, in North Europe, about 4/5ths of all direct calls from Asia dock at six main ports. Similarly, in the US, almost 40% of all shipping traffic docks at the Ports of Los Angeles – Long Beach (ITF 2015, 33-35). While ordering larger ships may

achieve cost savings for ocean liners, the megaship growth has led to the clogging of supply chains by creating bottlenecks at ports that are not ready for oversized vessels. In ports and harbors where the *Ever Cthulhu* was too large, we were delayed for hours by having to take in thousands of tons of ballast water (stored in large tanks below deck) just so that the ship was low enough in the water to safely move under Long Beach's Gerald Desmond Bridge in one case, or so that the port of Kaohsiung's cranes – not built to deal with stacks 6 containers high – could unload the ship in another.

All ports fear being replaced by the quicker, more efficient passage, so they invest heavy fixed capital in upgrading their infrastructure. The prospect of receiving bigger ships with larger volumes of cargo has increased the competitive dynamics of urban centers and nations seeking to attract big ships to their ports, and the revenue associated with increased maritime traffic. Major seaports from Long Beach to New Jersey have been investing in capital-intensive adaptations, leading to what some have called the "battle of the ports" (Danyluk forthcoming, CanagaRetna 2010, 12; Spivak 2011). Cargo traffic in the Port of LA has increased 700 percent since the early 1980's, and the port now has a 10 million containers per-year throughput of imports and exports. By the year 2020, the Port of LA expects the container throughput to rise to 24 million TEUs (Alameda Corridor Project 2001). The Port of LA and Long Beach's combined commitment to creating a logistics space that can accommodate large ship capacities has been an important factor that enabled the ports to capture 56 percent of containerized Asian imports into the US by 2005 (Leachman 2007 in De Lara 2018, 46). To accommodate this traffic as well as to increase its competitiveness, the port has engaged in two consecutive rounds of infrastructural adaptation through landfill, bridge raising,

and dredging projects. Building a megaport is a mammoth task, both financially and spatially. Channels must be dredged to make way for a deep-water harbor, not only once, but also repeatedly, in order to counter the tides that are constantly depositing sand. Islands are blown up. Crane heights must either be raised, or replaced by larger ones altogether. Yard space in the docks must be increased to support the higher volumes of containers entering the port at any one time. In the hinterland, highways, railroad corridors or intermodal systems are required to support the concentration of cargo coming into the city at any one time. There has been an increasing demand - and shortage in supply - of truck drivers. Stowage plans for dock yards now have to accommodate up to three times the container loads coming into port than just a few years ago. These infrastructural modifications, which have to be made repeatedly as megaships have continued to grow, have caused widespread delays in ports across the globe. Once vessel capacity exceeds a terminal's ability to efficiently load and unload increasingly bigger ships, backlogs reverberate around the globe.

From the standpoint of shipping industry experts, few have questioned the 'if you build them, they will come' logics that have been driving megaship frenzy. As one shipping industry executive told me, "Ships are being ordered, and there's no sign it's going to stop, so ports need to figure out how to deal with this coming onslaught" (Lynn Kan, personal interview, conducted March 5 2015, Singapore). In offering technological solutions to large-scale infrastructural expansion such analysts respond to a logistical problem with a technocratic response based on the self-interests of particular stakeholders, rather than probe into cascading social, material and political effects they bring to bear on the totality of global capitalist relations. In accordance with a utopian

vision of the capitalist market, however, maritime analysts and consultants bracket these complex and political effects out of their forecasts, imagining instead that a perfectly functioning shipping market will be restored once trade volumes have matched carrying capacities, bringing demand and supply back into equilibrium. In this approach to economic expansion, the target of such thinking is to see the world as partitioned into geographical entities that each undergo a temporal process of development relatively disconnected from other locations. Because such analysts often consider port authorities and industry agents simply as interest-based groups with preferences to turn a profit, then, their proposed solutions to the problem of megaship capacity often recommend specific measures as coping mechanisms, rather than attempt to assess the overall effects of megaships on the logistics industry. In this approach, rather than advise against further shipbuilding, or even forecast warnings of the coming overcapacity crisis, shipping journals and experts have instead recommended what they see as beneficial or profitable strategies for port operators to innovate, automate, and to expand their infrastructure in order to service the incoming ships. In this assessment, the only solution to megaships is the concomitant expansion of the mega-port.

Although mainstream economists approach megaship expansions as a problem that can be 'solved' by bringing supply and demand back into equilibrium, incentives at the level of the individual firm create an industry wide paradox of overcapacity, placing immense pressure on the public infrastructure on which they rely. Each time megaships increase in size and capacity and lumber their way onto the market, they demand huge outlays of public finances on the construction of corresponding ports. While the growth of megaships presents an intriguing economic puzzle in and of itself, less examined is the

burden that such megaship growth places on the port infrastructures of various hinterlands. Thus, the internal contradictions of capitalist circulation do not only come to the fore in view of the shipping industry's inability to forestall a self-made overcapacity crisis, but also in the monstrosity and uncertainty revealed in logistics' networked structure (Cowen 2014).

Because shipping networks depend on unstable and dynamic ensembles of physical, social, and financial infrastructures that are conceived and constructed at different local and regional scales, the extent to which megaships can fulfill their projected economic outcomes depends on the ability of port cities to support their growing bodies. Thus, a fuller account of megaship construction should also look at their reliance on a networked expansion of accompanying infrastructural technologies. Unlike the ship, ports, railways and other landed transportation infrastructures are fixed into the landscape, contributing to the uneven geographical development of spaces of capital accumulation. We shall examine how the viability of infrastructural investment in megaship building directly hinges on the production of related port and terminal infrastructure elsewhere, producing a networked uncertainty between capital and its dependence on state investments in logistical circuits.

Networked uncertainty: Megaport expansions and infrastructural power

The complex demands that megaships place on their corresponding ports thus reveal the deeply networked interdependency of large-scale logistical infrastructure. Because shipping networks depend on unstable and dynamic ensembles of physical, social, and financial infrastructure that are conceived and constructed at different local

and regional scales, the extent to which megaships can fulfill their projected economic outcomes depends on the ability of port cities to support their monstrous bodies. In this light, the viability of infrastructural investment in megaship building directly hinges on the production of related port and terminal infrastructure elsewhere. Even though port expansion and megaship orders are pursued in relative isolation through industry-specific logics of competition, the cascading effects triggered by megaship growth demonstrate that such initiatives are in fact deeply interdependent. In this sense, in concerning itself primarily with market-mediated and profit-oriented dynamics of demand and supply, neoclassical economics fails to account for the spatial and *political* dynamics that are brought into relation when aspects of accumulation - in this case, the growth of megaships - require a corresponding geographical expansion. What then changes if we turn our attention to the explicitly spatial dynamics of the megaship expansion, seeking to understand the geographical implications of economies of scale and their unevenly materialization in urban infrastructure? In this section, I employ David Harvey's notion of the 'spatial fix' to show that whereas neoclassical economics expect a tendency toward equalization of various spaces, an attention to the geographical intensification and expansion of capital accumulation reveals instead the deeply uneven development involved in expanding the mobile networks of trade.

Harvey's notion of the 'spatial fix', littered throughout his oeuvre but first theorized in The Limits to Capital ([1982] 2006), broadly designates forms of spatial reorganization and geographical expansion that serve to manage - though only temporarily - the crisis tendencies inherent in capitalist over-accumulation. As he explains, capitalism's growth imperative requires perpetual market expansion. In periods

of over-accumulation, capitalists are faced with a surplus of labor and capital without the conceivable means for bringing them together profitably, and this moment constitutes a crisis that forces capitalism to make new room for itself in either temporal or spatial terms, and thus to seek out new horizons of investment. In Harvey's terms, seeking these new horizons often requires geographical expansion into other territories and markets - a process that necessitates moving capital across long distances and finding ways to overcome those distances.

Harvey builds on Marx's claim in *Capital Vol. 2* that the productive forces of capitalism include the capacity to overcome spatial barriers by intensifying the links to spatially distant territories and regions by investing and innovating in the areas of transport and communication (Harvey 2001a). Specifically, where transportation is concerned, the continuity of the circulation of capital depends on the ability to physically move goods around, and thus depends upon the creation of "an efficient, spatially integrated transport system organized around some hierarchy of urban centers" (Harvey 2005, 377). Speeding up the transportation of goods or the communication of information can drastically reduce the turnover time of industrial capital and accelerate the circulation of commercial and financial capital, allowing capitalists to reinvest money capital into the production process. Harvey refers to this process as "socially necessary turnover time" (Harvey 2001a, 320): the average time taken for capital to be reinvested for average profit rates under normal conditions of production and circulation.

Crucially, capitalists seek to shrink this turnover time by making heavy investments in fixed kinds of capital such as infrastructure or transportation: Improving modes of transportation (that is, creating faster or more efficient modes of travel) helps to

overcome spatial distance, which, together with the credit system, provides the temporal stepping stone for the "annihilation of space with time" (Marx 1973, 539). As such, the *spatial fix* refers to a long-term investment that provides potential escape from crisis by expanding markets into regions beyond the local, validating heavy investments in fixed infrastructure at the point of production by increasing relative surplus-value and growing effective demand by expanding the consumer base to new populations.

The megaship is in this sense another technology in a long line of investments that aim to speed the turnover of capital by achieving economies of scale in the delivery of commodities to new markets. Yet this only covers one transportation node in a complex network of mobile infrastructures, some of which are more fluid than others. As Henri Lefebvre has shown, the production of space is central to the reproduction of capital and capitalist social relations (Lefebvre 1970, 1976). A crucial tension that thus emerges is the contradiction between the 'fixity' and 'mobility' of capital. Harvey explains:

> "[A] distinction must be drawn between fixed capital that is mobile and that which is not. Some fixed capital is embedded in the land (primarily in the form of the built environment or more broadly as 'second nature') and therefore fixed in place. This capital is "fixed" in a double sense (tied up in a particular object like a machine and pinned down in place). There is a relationship between the two forms. Aircrafts (a highly mobile form of fixed capital) require investments in immobile airport facilities if they are to function. The dialectic between fixity and motion then comes into play even within the category of fixed capital" (Harvey 2001b, 328).

While Harvey uses the example of the aircraft, the megaship might perhaps serve as an even better exemplar of this tension: if capitalism has to *fix* space (in the immoveable structures of transportation networks inland and in the built environment of ports and railroads) in order to *overcome* space, the megaship represents precisely this mobile form

of fixed capital that achieves the liberty of movement across the globe while reducing transport and communication costs through economies of scale. Importantly, the demand that megaships place on port infrastructures to expand their space and technologies of operation leads to one of the central contradictions of capital: that it has to build a fixed space necessary for its own functioning, only to destroy that space (and devalue the capital invested within it) at a later point in order to make way for newer spatial fixes. "Capitalist development," in Harvey's explanation, "has to negotiate a knife-edge path between preserving the values of past capital investments in the built environment and destroying these investments in order to open up fresh room for accumulation" (Harvey 2001, 247).

In this way, the spatial fix presupposes not an equalization of various spaces, but rather their uneven and differentiated development. Neil Smith and David Harvey have argued that infrastructure is a central force in enabling, expressing, and reproducing the uneven processes of development. The "frantic geographical expansion" of accumulation, Smith argues, "requires a continuous investment of capital in the creation of a built environment for production" (Smith 2008, 159). Here, infrastructures of mobility - "roads, railways, factories, fields, workshops, warehouses, wharves, sewers, canals, power stations" (ibid) - all function to concentrate capital and labor in metropolitan areas, while taking place alongside more "sprawling far-flung development" in which "roads and railways litter a landscape that has been indelibly and irreversibly carved out according to the dictates of capitalism" (Harvey 1999, 373).

Under capitalism, Harvey shows that there is an unrelenting struggle in which capital has to build a physical landscape or infrastructure for itself, that is appropriate to

its needs for accumulation at a moment in time. However, as soon as changing technologies or geographies of accumulation supersede the need for that infrastructure, capital finds that it only has "to destroy it, usually in the course of crises, at a subsequent point in time." In this sense, while spatial fixes leave a very physical trace in the landscape with heavy infrastructure, these forms of fixed capital are constantly superseded in the need for endless expansion. Overall, Harvey stresses, this means that there is "no long-run 'spatial fix' to capitalism's internal contradictions" (Harvey 2001a, 307).

As we drew into the port of Yan Tian, our first stop in China, the captain stood on the bridge of the *Ever Cthulhu* under a clear, azure-sky and pointed to the distance at the hilly islands that dotted the landscape. "This deep-water port used to be like one of those islands over there," he explained, as we edged toward a symmetrically triangular piece of land flanked by the largest unloading cranes I have ever seen. "Just five years ago I remember sailing into the terminal over there instead," he said, pointing to the left, "And there was an island here," he said, pointing in front of us. "They blew it up, and then they dredged the whole seabed, and now ships much bigger than ours can come into the port." Signs of such massive infrastructural investments haunted the landscape of ports everywhere we landed. With the much-anticipated opening of the newly expanded Panama Canal in 2016, for example, the US west coast is scrambling to ensure that ships will not be rerouted to the east coast ports. In 2013, the port of LA completed a 10-year, $370 million Main Channel Deepening Project that lowered basin depths from 45 to 53-feet to handle the introduction of larger vessels. Hundreds of cranes are being raised by as much as 30 feet to work the latest generation of mega-ships. And $1 billion has been

dedicated towards replacing the port of Long Beach's Gerald Desmond Bridge to accommodate the larger ships that pass underneath it.

All ports fear being replaced by some other quicker passage, so they invest billions to remain competitive. In terraforming land to create new terminals and ports in some places, removing islands to make way for ships in others, and slicing land open to create waterways, these efforts to adapt ports to megaships reflect the "opposition between countervailing forces" which, for David Harvey, constitutes the basis of the uneven development of the geography of capitalism. As "diverse intersecting forces" operate "within the overall unity of the circulation process," particular forms are fixed into the landscape in order to allow capital to flow, making for "geographical concentration or dispersal" in the circulation of capital (Harvey 1982, 419).

Turning our focus onto ports and the immobility of their fixed capital reveals a complex tension. The speed and volume of megaship expansions places an undue burden on ports to frequently upgrade their infrastructure to service ever-larger ships. In this respect, it is important to consider that the dynamics of decision-making between various actors in the logistics and transportation sector are very much dependent on the mobility of their fixed capital. Owners of fixed capital that is rooted in place (e.g., port authorities, terminal operators) are at a disadvantage relative to owners of fixed capital that is geographically mobile (e.g., shipping lines). Even though ships are "fixed" infrastructure in some respect, in that they contain the value of investment sunk in them, they are also geographically mobile in that they are able to flexibly change their scheduled routes to dock at ports that can accommodate them, and can incite competition among territorially

bound actors to their own benefit. In contrast, port authorities and terminal operators have operations that are fixed to the location of the port.

The relation between ports and shipping lines can thus be said to constitute a *networked* spatial fix. Heavy infrastructures of circulation are not just fixed in place in terms of their locations, but the viability of an infrastructural investment in one location also hinges on the production of related infrastructures that can connect it across the intermodal container network. Importantly, there are also locational decisions to be made about *where* immobile fixed capital should be built, and what they might build over or supersede in their place: as Harvey argues, any endeavor to understand the spatial organization of accumulation must lie at "the interface between transport and communication possibilities on the one hand and locational decisions on the other" (Harvey 2001a, 328). This, however, is where Harvey's argument of the spatial fix reaches a limit in its ability to explain specifically logistical forms of expansion, and to which I wish to add another dimension.

Despite Harvey's extraordinary work to advance the argument that transport infrastructures play a crucial role in the geographical mobility of capital, he has rarely engaged transportation infrastructure as *sites* of analysis in themselves. Transportation networks are the conditions of possibility for geographic mobility: "the capacity to move commodities depends upon the construction of a sophisticated, efficient, and stable transport system" (2001b, 330). But they largely only function as the conduit through which Harvey engages in analysis of the sphere of *production*. For Harvey, individual capitalists can profoundly shape the geography of production into distinctive spatial configurations by making particular locational decisions about where to build their

factories or plants. Here, infrastructures of mobility - roads, ships, railways, etc. - aid the geographical expansion of accumulation by creating a built environment that releases capitalists from spatial constraints.[40] Capitalists can "increase the range of possible substitutions" through transportation networks because these infrastructures loosen their dependence on local labor costs, raw materials, energy sources, and so forth (Harvey 2001b, 328). But transportation networks, in this way, serve only as the physical stepping-stones for the "annihilation of space by time." Transport systems are thus the enabling conditions - quite literally the underlying, *infra*-structure for a broader set of shifts in the productive realm.

It is not the aim of this chapter to speculate as to why Harvey did not spend more time on an analysis of transport infrastructure. What is important to register, however, is that focusing on transportation systems illuminates crucial aspects of the relations between the state, capital, and immobile, fixed infrastructure. The next section turns to such an analysis.

II. The Geopolitics of Transportation

A crucial outcome of the contradiction between mobile shipping lines and spatially fixed ports and rails is that the large scale and speculative character of such projects entails a high amount of state involvement in providing both administrative coordination and financial backing for infrastructure building. Harvey emphasizes the way in which the tertiary circuit of capital - referring chiefly to circulation - pushes a

[40] Raymond Duvall provides another important example: "In the US the development of the interstate highway system is another example, the intent of which was to disperse fixed plant productive operations throughout the country" (2018, comments to author).

wide range of social expenditures toward revolutionizing the productive forces in society (2006). As a class, capitalists will invest in secondary circuits (built environments of houses, offices, and factories) in the hope that conditions more favorable to accumulation will result. In order to be able to extract the maximum surplus value from a site of production, producers depend on a matrix of existing physical infrastructure, social services, and labor that can be made available to them.

Since producers already encounter the dilemma of the spatial fix in the concrete immobility of their direct investments - in plant, machinery, factories, etc. - they seek to enhance their mobility and reduce costs by depending on agents *other than themselves* to take up the responsibility of other fixed and immobile infrastructural costs. In this way, capital seeks to offload the cost of construction, maintenance, and the labor of transport to other entities, and this is primarily the state. Despite the fact that railroads, sewers, waterways, and ports are essential for producers to enhance the mobility of their commodities, producers precisely seek to improve their capacity to accumulate, and to move their operations, by depending on pre-existing infrastructure, or by persuading the state to build new infrastructure in order to attract capital to their locale.

Harvey notes the uniquely concrete nature of capital invested in infrastructural development when he writes that "capital necessarily creates a physical landscape in its own image" (2004, 66). This form of development has a highly qualitative element that escapes simple numeric measurement in the context of economic costs. Whereas flows of money are highly fluid, infrastructure is a form of fixed capital which "becomes literally fixed in some physical form for a relatively long period of time," and in which "social expenditures also become territorialized and rendered geographically immobile through

state commitments" (Stillman 2017, 286). In this way, the development of urban infrastructure is a highly political process that, for McFarlane and Rutherford, "inherently materializes and often reinforces existing sets of power relations within urban societies" through the decisions made regarding how this development should occur (2008, 365).

In this way, the story of the networked relation between megaships and megaports is not only of unchecked corporate ship expansions that make demands on public infrastructure. States increasingly follow capitalist imperatives to organize space in order to facilitate patterns of logistical flow. As states seek economic growth, a key factor in the circulation of economies is the ability to expand consumption, promote domestic demand, expand international markets, and thereby seek returns on investment in the sphere of circulation. Today, port cities battle to become logistics hubs because gaining foothold as a distribution gateway has become one of the chief ways to maintain state revenues now that many manufacturing plants have been outsourced or relocated to the South.[41] Because spatial fixes involve long-lived physical and social infrastructures that take many years to return their value to circulation through the productive activity that they support, cities and nations take large risks in investing in costly infrastructure that may be superseded well before their costs can be amortized. How infrastructures for capital circulation are funded has been a matter of some debate. Transport infrastructure can be publicly funded, with the public sector providing capital from general funds as is the case in the Port of Los Angeles and Long Beach. They can also be financed by private sources (Rodrigue 2017), through joint development or public/private partnerships

[41] The recent rush by towns and cities in the US to bid to be the new location of Amazon's second headquarters - a race to the bottom to offer the largest tax breaks possible - is a good example of the rising centrality of logistics hubs to state and urban economies.

(Mathur and Smith 2013), through property tax increments (Weinberger 2000), among others. Yet what has remained consistent despite a trend toward the privatization of ownership is that the role of government is growing in importance in regulating and commissioning infrastructure (O'Neill 2013).

In order to establish how and why the state understands its role to be central in facilitating the mobility of capital, we take a slight detour to understand historical shifts in the relation between states and infrastructural expansion. An early articulation of the state's role in the provision of transport systems comes from Adam Smith's *The Wealth of Nations* ([1776] 2000). In it, Smith does not use the term infrastructure, but rather defines physical systems of transportation with the term "public works" (2000, 779), which he calls "the third and last duty of the sovereign or commonwealth" coming after "defense and justice" (780). Even though the term suggests a fundamentally social understanding of public works - as that which "may be in the highest degree advantageous to a great society" - Smith is clear that the primary purpose of public works are "for facilitating the commerce of the society" and "for facilitating Commerce in general" (780).

Thus even from its early conception, transport infrastructure was conceived as public projects that facilitated the general growth of the economy. Smith explicitly assumed that public works were a domain beyond the profit motive: he suggested that the expense of construction need not be either defrayed from the general public revenue, nor from private investment, but would rather be raised by user fees and tolls (2000, 780-782). What is interesting about Smith's approach was that public works were to be "a part of, yet apart from" the capitalist system (Rubinstein 2010, 4): they constituted one of the

most basic enabling institutions of capitalism because they facilitated commerce by way of physical works that no single corporate actor in civil society would undertake. Their function, too, was to be utilitarian: roads were to follow the flows of commerce, and should not be made to serve "some great lord" or to "embellish the view from a neighboring palace" (Smith 2000, 782). Rather adamantly in fact, Smith envisioned public works as a key mechanism for pursuing economic equality: he proposed that higher tolls be levied on "carriages of luxury" than on "carriages of necessary use" that were transporting cargo, so that "the indolence and vanity of the rich is made to contribute in a very easy manner to the relief of the poor, by rendering cheaper the transportation of heavy goods to all the different parts of the country" (781).

Two lessons are worth drawing from this account: First, Smith eschewed a view of public works as spectacles of any kind, rejecting the idea that large-scale infrastructural systems should serve functions other than that of facilitating commerce. Second, even though Smith explicitly defined public works as a social tool for the "instruction of the people" (779), he primarily understood its 'public' function to be that of ensuring the flow of commerce in general. Why are these lessons significant? In chapter 2 of this dissertation, I argued that one key implication of the centrality of circulation to capital accumulation is that the overall economic wellbeing of the population comes to replace the particular wellbeing of the people, often producing the latter as secondary in importance to the former. In other words, as the circulation of the economy, and aggregate economic growth in general, becomes central to the political order, the institutions, rationalities, and organizations of state that would otherwise be associated with politics come to impose order on the polity so as to facilitate commerce

in general. In Adam Smith, we can already see the logic by which the centrality of transport infrastructures to "commerce in general" takes precedence over the function of infrastructures as a kind of "public good."

By the 1950s, the use of the term public works began to decline, and the civil engineering term 'infrastructure' began to be adopted by bureaucrats in two new global programs of spatial expansion: supranational military coordination through NATO's Common Infrastructure Program, and in international development discourse (Carse 2016). As the word expanded in use in the next few decades, what came to replace any notion of public good was an emphasis on physical networks that provided the means for global transportation, communication, and logistics networks (Easterling 2014). Rather than reflecting its function to the public, the terminological turn to infrastructure reflected an association with forms of calculative reason that served to organize material networks that facilitate contemporary economic and social organization. 'Infrastructure' designated the whole–part relations of sociotechnical "systems" (Edwards 2003), the nodal connections of "networks" (Castells 1996), and the heterogeneous alliances of "assemblages" (Bennett 2005). These definitions share a common agreement: infrastructures are the underlying systems that structure the successful circulation of other objects. In this sense, as Julie Chu (2014) argues, infrastructures "typically manifest as second-order agents of distribution; they are partial objects always gesturing to other flows and transactions for their completion as meaningful social forms" (353).

We can now establish connections between state investments in port infrastructure, the history of infrastructural projects as public works, and a contemporary scholarly understanding of infrastructure as the mobilization of matter into other social

forms. If we understand transport infrastructures to be the underlying material networks that regulate the mobility of capital over the mobility of people, then in a capitalist economy their function to both capital and the state goes beyond purely microeconomic concerns with slot costs or firm-level profits. Infrastructures of mobility also gesture toward the state and capital's faith in the durability of economic wellbeing: heavy investments in transportation infrastructure are a speculative bet on the continued growth of trade volumes, and thus the continued wealth of the nations. Megaships that are unveiled in grand ceremonies by the port and nudged into the water with a champagne bottle; heavy state investment in the automated technologies and grand vistas of the commercial port; these grandiose infrastructures, often insensible in the size and speed of their expansion, are as much figurations and projects of modernity as they are utilitarian economic objects.[42]

At the heart of logistical projects are monumental projections of the *durability* of capitalism's future, more so than they are about collective provisioning. Infrastructures, despite the recent terminological shift, have never only been durable public works that stimulate local economic development or collectively provision the public. Instead, once we contextualize the development of infrastructure within a history of global capital that sought to construct technical systems and spaces to ensure the flow of capital across long-distances, we can better understand that the apparent durability and scale of these infrastructures as sources of both speculative fragility and durable monstrosity. As monstrous and grandiose infrastructural forms, they are materialized promises and bets

[42] For a different context in which such an argument is made, see the literature on hydroelectric dams as projects of modernity, for e.g. Kenny and Secord 2010, Mitchell 2002, Swyngedouw 2015.

on the future of capitalist growth. This is an element of concrete infrastructure that the theory of the 'spatial fix' does not account for: In addition to their role in the circulation and realization of capital, megaships and megaports also perform semiotic and symbolic functions that graft projections of economic power onto the body of monstrous logistical infrastructures.

III. Durable Futures

In the latter half of the nineteenth century, the construction of large-scale networks of transportation and communication gave rise to new relationships between infrastructure and speculation. The railway is a prime example of this relationship: it was the financial cost of railway construction - over such extents of scale and distance - that necessitated the growth of joint stock companies and public finance (Chandler 1977; White 2012). Only by issuing stocks could railways obtain the long-term finance they needed, as the cost of construction was too great for any individual or even extended partnership. In the years from 1843 to 1845, railway development prompted a speculative mania in Britain as investors became increasingly enthusiastic about the prospects of each line proposed (Odlyzko 2010). They appeared to offer investors an almost guaranteed return since, once built, a railway line had near-monopoly of transport between the towns and hubs it served. Stocks issued by railway companies became speculative counters held for future gain, rather than because of their intrinsic worth. Governments simultaneously anticipated how railways would benefit the national economy, and gave land grants to rail companies that in turn sold the land to settlers, real estate companies, and other businesses to raise capital for the railroads. In this way, infrastructural expansion, the

states' facilitation of private interest, and speculative economies became yoked together as they mobilized scarce finance in order to exploit the opportunities for long-distance control.[43] It is not in the scope of this chapter to chart a longer relational history between railways and ships, but what I wish to mark for now is the ways that long distance expansion has long been imbricated in an imperial project.

The durability that transport infrastructure promises reflects a corresponding speculative fragility. Here, I follow Timothy Mitchell in thinking through the "durable yet fragile" nature of infrastructure. For Mitchell, modern infrastructure gave birth to corporate power by containing the promise of income flows that the long-lived fixed capital of equipment and technical systems seemed to guarantee:

> "Finance capital expanded into a future built upon the new life span of infrastructures, charging its flimsy paper work of financial promises with the durability of the iron, steel, copper, lead and concrete through which it now lived. Capital bulked itself up through the scale and longevity of the material grids of modern collective life, and then traded the expectation of this future income by selling speculative shares in the present" (2014: 438).

This is another way of stating Marx's insight that, counter to a Schumpeterian celebration of creative destruction where successive innovations shape the various epochs of modernity, the fixed capital invested in infrastructure and heavy machinery is bound to meet with contradictions as the falling rate of profit outpaces the ability for that sunk capital to return the surplus value invested in it.

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[43] Although it is not the focus of this chapter, it should be noted here that the growth of long-distance transportation infrastructure has a particular historical role in settler colonialism and dispossession. See, for e.g. Lisa Lowe 2015, Davies 2015.

What Mitchell's insight emphasizes in addition to Marx, however, is that the apparent longevity of infrastructure is sold as a promise on future gain. Its durability is not only a liability - that is, the fact that capital is tied up in particular objects and pinned down in place is not only a *problem* of fixed capital which the capitalist must overcome - it also expresses an implicit faith in the continued renewal of capital's future. In this way, understanding infrastructural expansion as "a promise of material durability in an otherwise 'flimsy' paper world" connects the relations between material fixed capital and financial speculation (Mitchell 2014). To emphasize the relation between the seemingly immaterial world of financialization and the material durability of the worlds we build, traced in terms of very particular modes of engineering, construction, and planning imprinted across space, is to interrogate the relationship between future and present. As Mitchell illustrates, durability means that the value of the enterprise "doesn't rest in the steel or concrete that is built, but value rests in the revenue stream that is discounted to reflect uncertainty and sold in the present in the form of stocks or bonds in many other forms" (Mitchell 2014). Durable infrastructures are not (or not always) as Adam Smith and urban planners might suggest, public works that stimulate local economic development. Rather, they are concrete materialities that perform qualities of durability, out of which is created a financial bet on the future that is reflected in the present through qualities of speculation and uncertainty.

We can now add another dimension to this relationship between infrastructure and the state. If the value of infrastructural projects depends on their performance of durability and corresponding ability to obtain a revenue stream for the state, the state is in turn incentivized to build infrastructure whose primary purposes are neither immediately

publicly functional nor responsive to collective need, but rather that channel corporate flows of capital, and facilitate a structure of urban planning and decision making in which corporations seeking enhanced mobility have extraordinary power to make determinations over where and how public funding should be spent, and on which infrastructures. The monstrous expansion of megaship sizes and the accompanying expansion of port systems exhibit this tendency. While shipping liners may understand their investment in burgeoning ship sizes as efforts to reduce per unit costs, their corresponding demand on corresponding ports require intensive outlays of public finances.

The Alameda Corridor project in Southern California provides one example of the role the state has played in funding logistical complexes. Planning for port expansion began in the 1980s with the creation of The San Pedro Bay Ports 2020 Master Plan and the Alameda Corridor project. Both plans highlighted the need key infrastructural projects to make space for future economic growth. Amongst other adaptations like dredging the harbor to provide deeper channels for large ships, the plan called for the construct of a vast inland distribution system that could link the ports of LA and Long Beach with rail, highway, and intermodal facilities (Erie 2004). The ensuing proposal to construct a $2.4 billion Alameda Corridor would involve the creation of new institutional arrangements that enabled Alameda Corridor proponents to apply for funding form regional, state and federal agencies. To enable the logistical project to gain access to funds otherwise reserved for freeway, light rail, and other public transportation projects, proponents of the corridor formed governance institutions, including the Alameda Corridor Transportation Authority (ACTA), which lobbied for broad support from the LA

Country Metropolitan Transport Authority (LACMTA), and the San Pedro Bay Ports Harbor Commissions. Transportation leaders from these institutions framed the need for public funding of distribution networks on the basis that logistics spending was a public good. The argument would prove successful, as shortly after, President Bill Clinton signed a federal loan for $400 million, a decision based on regional, state, and federal actors successfully framing Southern California's logistics network as "a public good worthy of federal funding" (De Lara 2018, 45). In total, the $2.4 billion needed to complete the Alameda Corridor came from a mix of public and private sources, including revenue bonds (51%); Federal loans (18%); The Ports (18%): California State grants (8%) and other sources (5%) mostly form LA MTA (De Lara 2018, 46).

The Alameda Corridor example suggests that beyond their specific economic investments in railways, roads, and other physical conduits, the state's production of a space for circulation is also a *political* investment in treating the reproduction of the relations of production *as* the public good. "In reality," testified the executive director of the Port of LA, "the beneficiary of the Alameda Corridor's successful completion and operation is the American public, to whom our domestic and global transportation efficiency is critical" (Larry Keller in Alameda Corridor Project 2001). In this framing, Keller conflates the interests of capital with the interests of an undifferentiated "American public," and leverages this equation to justify the use of public funds for producing and constructing a logistical economy in the interests of capital. As we shall shortly discuss, this conflation organizes social life through the treatment of economic growth as a proxy for public welfare, even as this conceit relies on uneven power

relations that differentiate environments and people based on their relationship to systems of supply.

In analyzing grand infrastructural investments as efforts to build a durable capitalist state, what I seek to underscore is that although investments in increasing the scale of logistical projects entail seemingly rational investments in durable infrastructure, these projects also produce unintended consequences in their speculative bets on continued trade growth. They must valorize their fixed capital assets in this way precisely *because* their market value depends on perceptions of growth and profitability. In this way, corporations have to promise shareholders futures that can be capitalized and sold as investment in the present. It is in this sense that we must think of ships, port infrastructures, and even shipping routes as much as financial assets as they are tangible things, beholden in significant ways to the rise of shareholder value.

Once we map the propensities of individual capitalists onto the totality of systems of circulation, however, things begin to fall apart. As monumental monstrosities are created out of the material fixtures of global distribution networks, ship-ordering frenzies based firm-level profit logics and speculative desire produce irrational rationalities in crises of oversupply. The clearest instance of this was when the captain and chief engineer of the *Ever Cthulhu* told me that ships are increasingly being built with 'shareholder cabins,' so that shareholders can take cargo cruises to survey the state of their investment. When they did so, the captain reported, they would nitpick at everything from rusty steel bolts to mismatched paint — "so you have to make sure your workers are competent, so that the investors continue to have faith in the company." This need to promise higher rates of return requires cost-cutting measures and labor

disciplining that as Mazen Labban has put it, "extend[s] the power of capital over living labor and intensifie[s] the antagonism between the owners of capital (shareholders and managers) and workers" (Labban 2013).

Beyond the anecdotal, a glut of private equity investments have been flowing into shipping in recent years, as asset valuations have hit rock bottom and private equity investors are looking to capitalize on downturn periods. This has potentially devastating consequences, since these companies in particular are under pressure to generate faster turnovers, and look to pull out of investments in 3-5 rather than 20-year horizons. Much like the mortgage crisis, shipping is being financed under terms that are far too easy. As one Maersk employee remarked to me in an interview, ships are being built 'more and more, bigger and bigger everywhere, often for reasons that are not economic." This statement underscores some of the irrational rationalities that underpin these modes of speculation and uncertainty. We might thus understand monstrous ships and associated infrastructural mega-projects not as *infra*structure - the underneath, unnoticed elements of technical operations - but as *monstrous* structures: projections of modernity within a state-capital nexus that seek to simultaneously construct a global space for logistical circulation as they place their hopes in the continuity of capitalist accumulation. The bankruptcy and collapse of Hanjin Shipping in August 2016 is one indication that the gigantism of these logistics complexes are indicative of some of capital's irrational rationalities.

The language of monsters captures the tension in which decisions that appear at the outset to be rational, ordered and calculative run up against chance, fortune and mystery. As David McNally notes in his book on the centrality of the monstrous as a

strategic-theoretical metaphor for global capitalism, "the idea that something monstrous is at work in the operations of global capitalism is never far from the surface today" (McNally 2010, 9). The etymology of the monster derives from the Latin *monere* (to warn). Amongst other things, McNally argues, "monsters are warnings - not only of what may happen but also of what is already *happening*" (ibid). Gordon and Gordon similarly note that fear and uncertainty accompany monster metaphors because they are often employed in the face of disaster. Monsters "are harbingers of things we do not want to face, of catastrophes" (McNally 2009, 10).

Following these theorists, we might understand the megaship as a monster that expresses both fascination with the grandiose, and fear in the speculative future that is to come. The simultaneous allure and fear of monster capital becomes evident in even a cursory survey of the shipping industry's reaction to megaships. Shipping professionals who exhibit a fascination with perpetual expansions of megaship scales express a contemporary social imaginary in which monstrous ships simultaneously strike a mixture of fear and fascination between that which is knowable, and that which is not, or as McNally puts it, "the role of human creation in the process of economics in particular and science more generally, and the anxiety induced by the impossibility of exorcising the unknown - economic or otherwise" (ibid.). Marx himself intuited this gothic character of capitalism through the use of the monstrous as a metaphor. In the *Grundrisse*, Marx explains: "capital posits the permanence of value (to a certain degree) by incarnating itself in fleeting commodities and taking on their form, but at the same time changing them just as constantly; alternates between its eternal form in money and its passing form in commodities; … But capital obtains this ability only by constantly sucking in living

labor as its soul, vampire-like" (1973, 646). As Jack Halberstam notes, Marx here describes the economic system in which we live, capitalism, as gothic "in its ability to transfer matter into commodity, commodity into value and value into capitalism" (Halberstam 2013, 103).

In situating growth of global logistics infrastructure within an analysis of monstrosity, I am working in part against a tendency in literatures on infrastructure to neglect a broader analysis of the crisis tendencies that arise when infrastructures are built in service of facilitating global flows of capital. Contemporary discussions of infrastructure often focus on the fragility and failure of large-scale physical fixtures (Graham 2009; Chu 2014) In these treatments, infrastructures are the assumed background to everyday life that is "often hidden, assumed, even naturalized" (Graham 2009, 2): they are the mechanical facilities and organizational structures that maintain and undergird the social life of cities - ensuring that waste is processed, water is potable, and that households have steady supplies of electricity and energy. As various literatures in sociology, geography and anthropology suggest, these otherwise mundane systems only become visible or eventful when they cannot cope with population pressure or budgetary crises, and experience systemic breakdown or disaster (see for e.g. Graham 2009; Star 1999; Edwards 2003). In these instances, infrastructures become spectacles of state failure, evidence of the inability of federal and municipal governments to equitably distribute the basic technical apparatuses for collective life (Latour 1999; Larkin 2008 & 2013; Star 1999).

Yet, these shortcomings do not only result from the failures of national fiscal regimes or localized governments. As Timothy Mitchell argues, "they also reflect a

contemporary world in which financial infrastructures allow the accumulation of capital to bypass the work of building durable or productive structures for collective life" (Mitchell 2014, 437). As capital has been drawn into large infrastructures, it flows into projects that weaken rather than enhance the possibilities for future collective life: into pipelines for oil exports, skyscraper condominiums, privatized airports, and fracking fields. In addition, these fixed, immobile, and large-scale infrastructures, increasingly massive in size as they seek to service larger volumes of containers coming into the port, extend the fixed infrastructure of distribution - and the associated pollution, noise, and spatial expansion entailed in their construction - unevenly across the city, effectively shifting the costs, and socializing the risks onto society (Li 2009).

IV. Trenching and Terraforming: Two projects of infrastructural violence

In the final section of this chapter, I wish to illustrate through two examples how the monstrosity of infrastructural growth produces violent effects on the spaces and bodies of populations situated at the margins of the global capitalist system. In both these examples, renewed demands for capital to flow seamlessly through the global circuits of production impact lived realities in ways that expose the unendurable monstrosity of the infrastructural projects otherwise cast as durable futures.

Trenching

An ethnography of infrastructure, Susan Leigh Star writes, is "the study of boring things" (1999: 377). Infrastructures, after all, seem to be uneventful things. They often appear to us as finished objects, in the tunnels, roadways, buildings and walls whose solid, situated

presences conceal the unruly and lively processes of labor, financing, districting and the like that are involved in bringing them into being. In recent years, the politics of infrastructure has become a productive area of inquiry for scholars in anthropology, geography, and international relations. Those who write in this vein often frame their point of entry by pointing to our tendency to neglect our banal urban surroundings: even though we traverse various infrastructures every day, they appear on the periphery of our vision. We sense their importance only by traveling along and living within their circuits. It is only when they are rendered inoperable - such as in traffic stops, labor strikes, and disrepair - that they emerge at the forefront of consciousness (Wakefield and Dyer 2015; Graham 2009). Accordingly, these scholars identify two distinct moments at which infrastructure becomes an eventful and lively force: first, at the point of introduction or upgrade, when they become public markers of modernity and technological progress, and second, during times of systemic breakdown and disaster, when they become markers of state failure or tragedy (Latour 1999; Larkin 2008 & 2013; Star 1999). In the mundane in-betweens, infrastructures slip out of view, becoming "the embedded technical backdrop of social flows and exchanges" that are barely perceptible and unworthy of significant social attention.

Yet, as I stand by a baseball field in Wilmington, California and stare into the open-aired trench that forms part of the Alameda Corridor, watching brightly-colored shipping containers rumble below my feet, it strikes me that infrastructures can only be ignored if their presence directly serves your needs, but are impossible to ignore when they actively work against them, such as by cutting through your neighborhood and

polluting your spaces of habitation.[44] In Wilmington, Vernon, Compton, Lynwood, one does not have to wait for infrastructure to break down before it is noticed. In these predominantly working class, Latinx and/or African-American suburbs of Los Angeles (henceforth LA), infrastructures that facilitate the circulation of goods suffuse one's living environs.

The 700 percent increase in cargo at the port of LA since the early 1980s (Alameda Corridor Project 2001) has placed uneven environmental burdens on the Southern California region. The first burden is spatial: the volume of cargo coming into the ports of LA/LB has increased from 10 million in the early 2000s to 17.5 million in 2017 (POLA and POLB 2018). With a densely populated urban area, and a built environment constructed to only receive half of current container loads, the Ports of LA and Long Beach have had to find space to hold and transport all the cargo that is being imported and exported. The solution proposed in 1981 was the Alameda Corridor, which I have mentioned earlier in the chapter. The Alameda Corridor is a 20-mile long rail cargo expressway that links the ports of LA and Long Beach to a transcontinental rail network. At least half of the corridor cuts a three rail, 10-mile long, 33-foot deep and 50-foot wide open trench through Los Angeles's lowest-income neighborhoods. The Corridor was built on the justification that the ports and coastal areas of Southern California lacked enough space to shoulder increased shipping loads. Logistics advocates suggested that by building a rail corridor that could ship containers quickly past the ports

[44] This point has also been made by scholars of infrastructure in the underdeveloped world, who point to the fact that the frequency of disrepair, breakdown and disruption makes infrastructure a deeply felt 'problem' of daily life beyond the global South. While the 'invisibility' of infrastructure has become a common starting point in the literature of relatively privileged urban communities in the global North, they are much more visible to underserved communities, who frequently experience disruptions to public utilities and other network. (See Cesafsky 2017, Edwards 2003; Larkin 2013).

and into Southern California's 'inland empire,' shippers could avoid congestion, meet their just-in-time delivery demands, and use 'cheap land' to invest in larger warehouses (De Lara 2018, 56). If Alameda Corridor advocates – largely political and business elite – justified public spending on the basis that the "main beneficiary" of an enlarged logistical distribution network was "the American public" (Keller in Alameda Corridor Project 2001), they were not considering the corridor's impact on local populations. The cities along the Alameda Corridor bore the brunt of restructuring in the 1970s and 80s: between 1978 and 1982, more than 75,000 manufacturing jobs were lost in cities south of downtown Los Angeles. Unsurprisingly, the restructuring corresponded to changes in the demographic composition of the region: once white working class suburbs are today majority Black and Latinx working class cities, whose neighborhoods the Alameda Corridor now buttresses or cuts through. In cities such as South Gate, the Latinx population increased from 4% of the population in 1969 to 46% by 1980, and 83% in 1990. Similar population changes occurred in Maywood, Lakewood Bellflower, and Bell, all cities affected by the Alameda Corridor (Recker 2008).

The second burden is environmental. Shipping-related emissions from the ports of Los Angeles and Long Beach are estimated to contribute to a total of 59% of total city emissions (Human Impact Partners 2010), while roughly one third of all goods movement emissions across the state of California are generated in the Los Angeles region (Recker 2008, 1). [45] Many of the vehicles associated with logistics complexes, including trucks, trains, and container ships, operate on diesel fuel or heavy fuel oil, which release cancer-

[45] An OECD study of shipping emissions found that this number is similarly high in other major ports, with Hong Kong's port emissions contributing to 89% of total city emissions, and Rotterdam's port contributing 23-40% (OECD 2014, 36).

causing toxins. The State of California Air Resources Board estimates that by 2008, approximately 3700 Californians had died from cancer caused by exposure to logistics-related traffic and diesel emissions. It also estimates that far more – 18, 000 – died annually from exposure to ambient levels of diesel particulate matter (State of California 2008). Furthermore, port expansion disproportionately affects parts of the Southern California region with high concentrations of poor, Black, and Latinx residents. Data form the Los Angeles County Health Survey reveals that Long Beach communities in close proximity to the Port of Los Angeles experience higher rates of asthma, coronary heart disease and depression (2.9 percentage points on average), compared to other communities in Los Angeles (Human Impact Partners, 2010).

When I took a "toxic tour" of these cities in November 2014, there was a thick smell of oil in the air whenever we stepped off the bus. Led by Robert Cabrales, a community organizer with Communities for a Better Environment, the toxic tour is an effort to raise awareness around the toxicity and environmental harm experienced by these neighborhoods laid waste by the logistics industry. Cabrales tells me that the necessity of global goods movement is used constantly to justify the pollution, displacement, and policing of neighborhoods: "The Alameda Corridor cut a line through many neighborhoods. It divided families across a street" (Interview with Robert Cabrales, CBE, November 5 2014). For Cabrales, communities who fight against displacement, eviction and pollution in their neighborhoods are constantly aware of the ways in which the global supply chain bypasses them while leaving them to suffer its effects. "We know that these goods are going to continue coming through our cities, but they don't come to us. They aren't from the community and the benefits don't stay here. We have to pay

attention to global goods movement because we have no choice but to see it everyday" (ibid).

As we talk, we are standing in front of a strip of houses on a street lined with bougainvillea - an idyllic residential neighborhood by most measures, except for the backdrop of oil refinery towers and shipping cranes towering in the background, their smoke emissions visible in the sky, and a sunken portion of the Alameda corridor in front of a row of single story ranch houses, where we watched containers toward an intercontinental railway hub that has dug a 10-mile trench across the city. In the suburbs of LA, infrastructure is everywhere – most vividly as an intricate web of highways for automobile traffic – and it cannot be ignored.

When the Alameda Corridor opened on April 12, 2002 to much fanfare, private investors, members from the House of Representatives, and harbor commissioners gathered by the waterfront to celebrate it as a job creator, one of the first public-private partnerships in the region, and a key to the future success of the ports of Los Angeles and Long Beach. Then Los Angeles Mayor Richard Riordan opined that the California Gold Rush would pale in comparison to the lasting boom that would come by linking local ports directly to the national rail network (Karnette 1994). The art documentary *The Forgotten Space* features the scene of this opening rather prosaically: the scene opens onto the Port of Long Beach on a typically hot, sunny day. A marching band fully decked in regalia sits on a stage, while the camera pans from business-suited men taking pictures to the containers rolling by on ships in the port. A railroad engine belonging to Union Pacific is emblazoned with a flying American Flag, accompanied by the words "Building

America." Behind these scenes, the disembodied voice of California Congressman Stephen Horn declares with gravitas:

> "I believe that as we sit here today, right behind us is the silk road of the new millennium, because California is the gateway to the Pacific Rim and Latin America. And our being here today also is a further demonstration that we're standing up to what took place on September 11. We're not looking inward; we're looking outward, and that's a very very important thing for us to do. And our presence here demonstrates the freedom born when we are on cutting edge of technology, in the greatest state in the United States of America" (Horn, in Sekula and Burch 2010).

Embedded in Congressman Horn's comments are a set of depictions of global trade worth analyzing. By understanding the Alameda Corridor as "the silk road of the new millennium," Horn links the economic wellbeing of the state of California to its ability to act as a pathway of global trade. Just as states that were in control of the ancient Silk Road charged tariffs and taxes to traders who passed through, the transportation conduit is seen as a way to derive revenues from the process of circulation. More than an economic explanation for the importance of transportation networks, however, Horn also gestures toward the Alameda Corridor as a project of modernity, asserting LA's global relevance and renaissance through its ability to build networks of global connection. Third, this 'outward'-looking position on global trade is simultaneously asserted as a nationalist testament to the sovereign power of the United States months after 9/11. Economic power and sovereign wellbeing become intertwined with infrastructural projects of global mobility, suggesting that a core attribute of sovereign power today is not just the ability to guard from threats, as the security apparatus that has risen after 9/11

suggests, but also the ability of a nation to sustain a circulating global economy *as* a way to protect national interests.

The politics surrounding the construction of the Alameda Corridor exemplify the complicated relationships between corporate, city, and state interests that enmesh citizens and vulnerable populations within negotiations over how and where to build infrastructures of global circulation. Although transportation infrastructure projects are usually national projects, they are global in the sense that they both symbolically represent cities' intertwinement with global networks of trade, and are also economically interdependent on the global volumes brought into their port. As federal, state and municipal governments identify infrastructure as a critical area of state intervention and investment, such projects are often imagined as *global* projects of modernity, which imagine and seek to produce cities in the image of modern, "world class" spaces of economic wealth.

In this sense, infrastructures of global circulation are more than just technical apparatuses for the mobilization of matter into legible human resources (Chu 2014). They are also the physical manifestation of the state's plans for the future shape of its productive forces. Even as supply chain infrastructure seeks to make goods move more fluidly through the city, the construction of such infrastructure fixes and freezes built environments in territorial space, making flows of goods more possible and efficient, while rendering the lives and mobilities of the low-income communities around them much more difficult.

Terraforming

In Singapore, the need to expand logistical space takes on a different expression in the 'reclamation' of vast swathes of land from the surrounding ocean. As a land-scarce nation, the island state of Singapore, for much of its history since independence from colonial rule, has been engaged in what is known as land reclamation projects in order to increase the living and working space of the island. In the fifty years since its independence, its population has more than doubled, requiring the continuous construction of both private condominiums and the high-rise public housing that serves 80% of the population. But vertical growth has not been enough to sustain a burgeoning populace: Singapore's land area has grown from 581.5 km^2 in the 1960s to 723.2 km^2 today, an increase in territory of almost 24%. By 2033, the government plans to increase its land area by another 100 km^2, making the island a full 30% larger than its original size. Singapore's land reclamation strategy has not been about pure expansion, but the strategic expansion of commercial space. In the 1960s, extensive land reclamation works joined up seven offshore islands to form Jurong Island, a large manmade island that houses Singapore's hazardous chemical and energy industries away from residential populations. But no land reclamation project has been as extensive as the Tuas reclamation project, which is creating a $3.5 billion deep water port on the western tip of the island, strategically located in a region with proximity to important logistical distribution channels, namely industrial areas, expressways, and the Second Link, a route often taken by goods vehicles travelling to and from Malaysia (Teo 2003, H14).

"Because the port thrives, so Singapore thrives," Prime Minister Lee Hsien Loong would declare at the unveiling of the terminal in 2015 (Lee in Lim, 2015), articulating a common refrain in the national imaginary: if the survival of this tiny nation-

state hinges on the continuous expansion of its markets and working population, so too, does it require the expansion of the spaces in which they operate. As the busiest transshipment port in the world, Singapore regularly hosts the largest megaships in the global fleet, since it is the stopping point between the largest Asia-Europe shipping routes. To shoulder the increasing vessel capacities, the Ministry of Transport has laid out a plan to move the entire port operations from 3 different points on the island to a large piece of land on the western corner. This mammoth project will require reclaiming a portion of land that is a whole 7% of the current island area, and will cost 4 billion dollar project, financed primarily by the Port of Singapore Authority (PSA) – a private entity who uses public funds acquired indirectly from Singaporean's compulsory saving schemes for many of its operating costs.

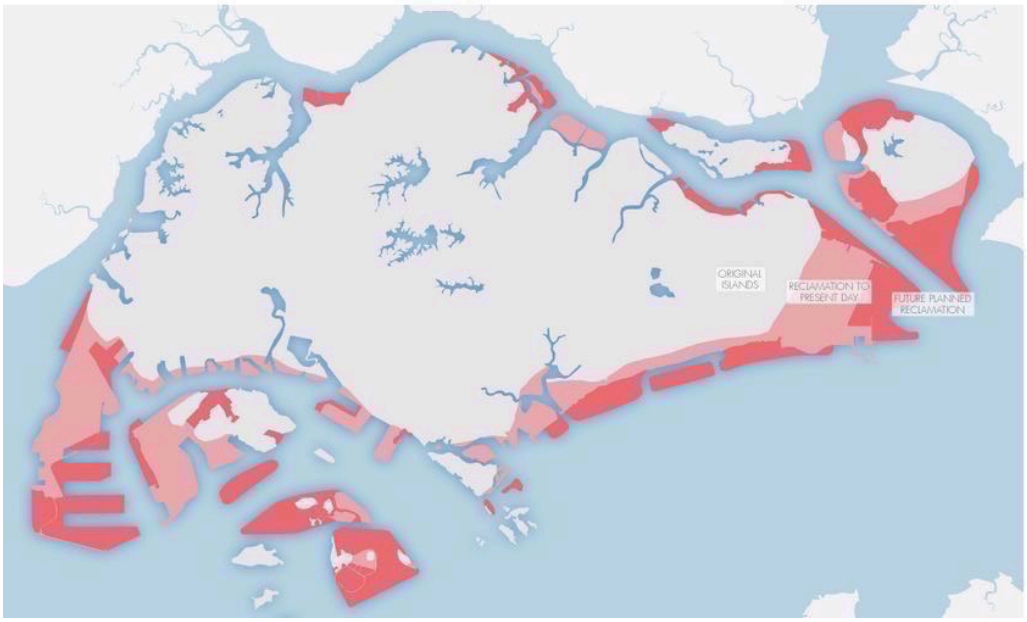

Figure 14: A map of Singapore's territorial expansion from 1965 to present. White areas represent the original land area of the island; the pink designates land that has been reclaimed up till the present day; and the red projects the land that will be reclaimed by 2033.

To supply itself with reclamation material, Singapore first leveled most of its hills in the 1960s, transforming an undulating island into a largely flat surface. Then, it dredged its coastal seabed. Local resources have, however, been barely sufficient to support the massive need, and so Singapore began importing sand from neighboring countries. In the last 20 years, Singapore has imported a reported 517 million tons of sand, making it by far the largest importer of sand worldwide (UN Comtrade 2014, Peduzzi 2014). To give this mammoth figure some context, terraforming 0.6 miles of new ground requires 37.5 million cubic meters of sand fill. This is the equivalent to 1.4 million dump trucks' worth of sand – a line of trucks so long that it would snake from New York City to Los Angeles, and back again. Most of this sand used to come from Indonesia, Malaysia, and Vietnam, but as the environmental impacts of sand mining have increased, depleting marine life, impeding seaborne traffic, and erasing at least 24 Indonesia islands since 2005, all these countries have now restricted or banned exports of sand to Singapore (Peduzzi 2014).

Yet, despite recent media coverage about the implications of potentially illegal practices of sand mining (Milton 2010; Comaroff 2014), under the *United National Convention on the Law of the Sea*, Singapore can legally 'reclaim' sovereignty around existing islands, reefs, and archipelagos. In this way, land reclamation constitutes a legally sanctioned form of territorial expansion, whose violent effects on vulnerable populations are often obscured by debates over its geopolitical implications. Joshua Comaroff notes in Harvard Design Magazine, for instance, that because the "physical basis of the state can be incrementally eroded or expanded" (Comaroff 2014) land

reclamation inaugurates a "flow of territory" quite distinct from other forms of territorial expansion such as war, military occupation, or colonial expansion.

The viscosity of coastal borders augments a key insight. Far from finite and unchanging resource, territory in its modern conception is, as Stuart Elden argues, a particular *technology* of sovereignty rather than an objective fact: a "distinctive mode of social/spatial organization" that is "historically and geographically limited and dependent, rather than a biological drive or social need" (Elden 2013, 10). Land reclamation is not a new form of appropriation. Rather, territory has always been a particular mode and logic of spatial organization, in which ostensibly 'new' territory always *comes from somewhere else*. As Neil Smith notes in the colonial context, beginning in the 1880s, capital ran out of "absolute" space into which it could expand (2008, 119) with the final partitioning of Africa at the Berlin Conference in 1884. For him, in order to sustain the necessary economic expansion of capitalism, capital has to seek new pathways for accumulation, so that when the seizure of 'unoccupied territories' was complete, geographical expansion had to turn to other forms of partitioning and redivision.[46] Yet, land reclamation exhibits a tendency that straddles Smith's line between expansion through absolute space and re-division through relative space: in expanding Singaporean territory by extracting a territorial resource from its neighboring countries, Singapore participates in widening the uneven geographies of capitalism. As a state seeking to optimize space for facilitating logistical circulation, Singapore's

[46] While I do not have the space to go into it in this chapter, Smith's proposition of a neat temporal distinction between expansion through "absolute space" and re-division through "relative space" has been subject to questioning in debates over the ongoing presence of primitive accumulation in settler colonial contexts (see for e.g. Nichols 2015; Ja;; 2013). The colonial implications of land reclamation might arguably blur these lines between absolute and relative space

reclamation practices pursue the expansion of capitalist space at the expense of the destruction of other spaces and livelihoods.

To pause over the term 'reclamation' for a while, one might recognize that dubbing an act of terraforming as "reclamation" is a misnomer. In its deverbative form, reclamation suggests an act of restoration or return in which one is retrieving something that was once yours. This works as a fiction on two registers. First, it presupposes that the coastal sea itself acts somewhat as an *aqua nullius*, 'empty' space that has no history or value, except to be turned into the property of the state, with the corollary that reclamation is coextensive with an active dispossession from elsewhere. This naturalizes a thoroughly human process of dispossession as a form of natural right. Second, to name the process as a form of "*re*-claiming" centers the spatial locus of activity on the site in which land is being created, rather than from where it is being taken away. In reclamation, a state deserves to procure or cultivate a site of habitation or commerce; few questions are asked about the impacts on the vulnerable communities and environments in and around the sites from which sand is extracted.

This, however, is where the uneven distribution of the logistics economy becomes especially evident: Because the heavy financial burden of port construction is placed on states to build infrastructure, states have differential capabilities to expand and build hypermodern ports, depending on their access to capital: competing ports along the straits of Malacca – Indonesia especially – do not have the same extraordinary access to capital that Singapore does. As a result, peripheral ports, and regions with inadequate (and therefore more expensive) access to transportation infrastructures often take on risky

growth strategies, including immense foreign debt, in order to compete for commodity flows.

Yet, within a global logistics economy where ports are relatively substitutable within hypermobile corporate supply chains, logistics-oriented growth strategies have not been found to bear fruit. As Danyluk (forthcoming) and Jaffee (2015) have argued, most of the goods moved through a transshipment region are destined for somewhere else, and general no local sales tax revenue, such that the payoffs for risky investments in logistics infrastructure are often vastly overstated. Resultantly, there is little access to the economic benefits of mobility that these ports facilitate.[47] In this sense there is extraordinarily differential in access between developed and developing countries in their ability to compete on the basis of a logistics economy: building the physical infrastructure that requires such heavy capital investments privileges countries who not only *have* the financial ability to pay, but also requires that those who seek that model of development bind themselves into systems of debt and credit that exacerbate uneven geographical development between competing localities.

That the benefits of these logistics-oriented schemes are dubious should be further weighed against the economic, ecological, and social costs of infrastructural investment. As Danyluk argues, while "place-based elites and officials go to growing lengths to capture cargo, the costs and risks are disproportionately borne by the most vulnerable

[47] This is exemplified by the existence of pure transshipment hubs where freight congregates then moves on, but never actually leaves the port to enter the country. Thus a poor region may have huge amounts of trade massing on its doorstep while obtaining little benefit for its own economy. For example, 99% of the 1.1 million TEUS handled at Freeport in the Caribbean are transshipped and do not stay in the local economy. This reflects tensions between relational and territorial power, as discussed by Amin (2004: 36): 'local advocacy must be increasingly about exercising nodal power and aligning networks at large in one's own interest, rather than about exercising territorial power".

actors in the network" (forthcoming, 21). Studies suggest that the true casualties in competing port growth are the communities who live and work in the pathways of global trade. The Malaysian media has reported that Singapore's land reclamation in the Johore straits has affected thousands of fishermen who make their livelihoods in the coastal zones of Tanjung Kupang, Tanjung Surat, and Kota Tinggi just across from Singapore's Tuas land reclamation site (Straits Times 2002, Shepard 2018). A research officer for Friends of the Earth Malaysia has also found that the land reclaimed in Singapore has meant the annihilation of mangroves, wetlands, and reefs, destroying the habitats of fish, sea turtles, and other marine life, and trading off the multi-million dollar fisheries sector in Malaysia for the pollution and waste of transport hubs and industrial zones (Shepard 2018).

In Indonesia, Singapore's sand mining activity has similarly adversely affected local communities. According to the Indonesian Center for Forestry Studies (LPHI), more than 500 cubic meters of sand had been exported from Riau to Singapore when the Indonesian government banned the trade in 2001 (Kog 2006, 18). The LPHI's Chairman suggested that 4000 square kilometers of seabed, as well as an extensive area of coral reefs, had been damaged by sand mining in Riau. According to his estimates, at least $1.2 million is required to rehabilitate just 1 square kilometer of seabed, such that the revenue earned by central and local administrations in sand exports was far below the amount needed to rehabilitate Indonesia's coastal environments (Kog 2006; Haidir 2003). In 2001, Indonesian environmental NGO Kaliptra issued a report that dredging and mining within meters of the shore had caused coastline erosion, destroyed fishing grounds, and leading to the disappearance of 24 Indonesian islands since 2005 (Surya 2003; Kog 2006,

19). The report suggested that rehabilitation would take more than 30 years. In Riau, fishing communities have reported that incomes have plummeted as much as 89% since the sand trade began (Surya 2003). These groups, who are disproportionately poor and racialized, thus subsidize the growth of logistical economies through the dispossession of their own livelihoods, environmental degradation, and health impacts.

There is some irony in noting these environmental impacts of extraction (Sonak et al., 2006, Kondolf 1994): the very anthropogenic changes caused by such forms of extraction have become part of Singapore's raison d'etre for land reclamation. Officials have cited sea level change as a primary motivation for raising the level of reclaimed seabeds, portraying Singapore as a victim of climate change, even as the bulwarks that ostensibly protect the island from such processes play a key role in exacerbating its effects. Not least, the labor hired to do the work of such infrastructural development are often precisely those driven from their own communities by such predatory practices of extraction – hired on short-term, contingent, and extremely low-waged contracts to perform highly dangerous work. In this, the very workers charged with expanding Singapore's sovereign space facilitate their own dispensability by constructing the very infrastructure that pursues economic growth on the basis of their precarity and low wages. At multiple scales, then, the pursuit of logistics-based growth strategies, of which Singapore and Los Angeles provide only two examples, reveal themselves to be risky investments in logistical futures. These logistical futures should be treated with caution, given the uncertainty that they will produce the economic outcomes they promise, and also given the power relations they reproduce between the elites who justify logistical

expansion on the basis of the public good, and the public who bears the costs of these projects in unevenly distributed ways.

Conclusion

This chapter started with the seemingly strange phenomenon of a megaship-building frenzy, and ended with a granular focus on the sand mining and terraforming practices of Singapore. If these empirical foci seem distant, it is because this chapter has, perhaps to its detriment, tried to chart a story that illustrates the totality of capitalist social relations through multiple scales of infrastructural expansion. As I have discussed, the rapid expansion of megaships reflect, on the one hand, how capitalist desires to expand circuits of capital accumulation can produce their own contradictions in creating an overcapacity crisis. This underscores two unintended consequences of the shipping industry's pursuit of growth: first, firm-level decisions to pursue market share do not take into account the industry-wide ramifications of their choices. Second, these industry-wide ramifications do not only impact shipping lines, but also make capital-intensive demands on states and cities to make costly adaptations to their port infrastructure. As I have discussed, these contradictions are manifestations of David Harvey's theory of the spatial fix, in which concrete infrastructure becomes fixed in the landscape in ways that aid the mobility of capitalists and commodities, while the costs of those flows are most disproportionately borne by vulnerable populations. Yet, states continue to succumb to these demands to "catch up," investing public funds into improvements and expansions at the port.

What I have sought to show is that we miss something from this structural account if we neglect the fact that the states' goals and those of capitalists have long been

merged in facilitating the mobility of capital in ways that seek to ensure the continued growth of productive forces. As such, infrastructural projects invest in the durability of a future built on logistics-oriented growth, even though the benefits of doing so are unclear. Viewed in this way, the speculative investments made by states and capital privatize the ownership of the means of circulation, while socializing risks by distributing the effects of these infrastructures unevenly across the population. Finally, I illustrate the violence of infrastructural expansion through two brief examples of logistical projects, both of which are premised on the dispossession of vulnerable populations at the margins of the logistical system. Ultimately, what I have sought to do in this chapter is to sketch an admittedly jagged path towards understanding how the spheres of production, circulation and consumption, the relation between fixed and flowing infrastructures, and the relation between state and capital, are not different scenes but intimately tied up in one another. To understand their intersections at a structural level, however, is to miss attention to the lived realities in which monstrous projects of expansion not only fix spaces and infrastructures in place, but actively contribute to the violent dispossession of spaces not typically glorified or understood as celebrations of capitalist accumulation.

Interlude 3.
Landlessness and the Working Life of Seamen

Figure 14: A partial view of the ship's bow

The bow of the ship is the only place on the *Ever Cthulhu* that affords a modicum of silence. To get there, you walk down the length of the narrow grey deck, flanked on one side by containers crowded into towering stacks that scrape and creak against each other as the ship cuts through the waves, and on the other by the powerful sweep of a wind so strong that you have to fight not to be blown backwards. At the foremost tip of the ship, you climb a few steps onto a large open deck painted grey and surrounded by giant chains and fat coils of synthetic rope, and suddenly, the mechanical roar of the ship falls away.

Having finally wended our way out of the US ports, the *Ever Cthulhu* has been traveling across the massive Pacific Ocean for more than a week now. Yesterday, we cleared the frigid Kamchatka Peninsula. The snow and ice beating against the ship for the past week has melted away, and the deck crew that has been trapped inside cleaning the walls and floors of the accommodations are now back to work on the endless task of

the seaman: fighting against perpetual rust. “You know Sisyphus?” The captain asks one day as we take a walk around the deck. “Working on a ship, it’s like that. You are fighting forever against the saltwater eating away at your vessel. The biggest enemy of the ship is not pirates, it’s corrosion.” Today, the ship has been awash in the sounds of grinding, scraping, hammering and drilling, scraping rust off and painting over it in an endless cycle that repeats itself every two months. All of this is set to the background soundtrack of an endlessly roaring engine that suffuses the air and shakes the accommodations with a throbbing, pulsating, mechanic hum.

But on the bow, penned in from the wind and rage by the *Ever Cthulhu*’s bulwark, you can look outward onto an endless, unbroken horizon of ocean in near quiet, and almost think that the ship is barely moving. A step up onto a grilled ladder quickly dismisses this fantasy of a softly drifting ship: peering over the edge of the ship’s prow towards the churning waters below reveals the ship’s bulbous bow, a 1,000 ton snout-like protrusion of pure aerodynamic steel that cuts through the ocean, almost heaving the liquid blue upwards before pushing it back powerfully against the hull, where the waves churn themselves into a cerulean blue froth and then crest outwards in a diagonal wake. I can’t judge how far we are from the ocean’s surface, so I spit into the sea – crude, really – and count the seconds it takes to hit the waves. Seven. By the time it reaches the sea below, my ball of spit has already flown several meters behind me. We are forging ahead at a speed (18 knots per hour) beyond my bodily comprehension of motion. When you are surrounded by nothing but this limitless, shifting, liquid expanse, stretching in all directions for days before hitting land, all distance becomes incalculable.

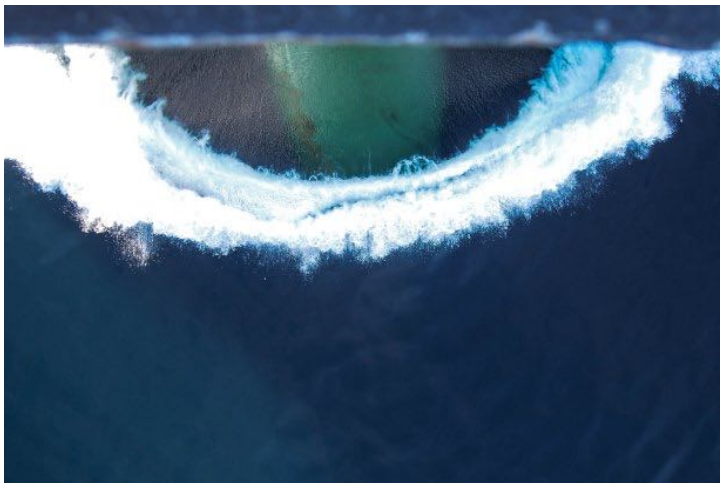

Figure 15: A view from the platform of *Ever Cthulhu*'s bulbous bow.

In gazing at the uniformity of the open sea from the safety of this colossus, it has not ceased to amaze me how much this deep blue, whose liquid nature Carl Schmitt (2006) has suggested fundamentally confounds the very bases of political authority and law, constantly exceeds our firmly landed conceptions of territoriality and belonging. For centuries, humans have drawn rhumb lines, navigational routes, and territorial markers across the ocean's surface, deigning to create roads and map sovereign claims onto inconstant, liquid matter. Yet, in swallowing whole planes such as the as-yet unrecovered Malaysian Airlines MH370, in evading the surveillance technologies we now expect to seamlessly take us to our landed destinations, and in absorbing and folding much of the Anthropocene heat into its warming depths, the shifting, turbulent, evasive ontology of the wet ocean contravenes the very idea of a stability-conferring foundation. On the open sea, Schmitt reminds us, there are "no limits, no boundaries, no consecrated sites, no sacred orientations, no law, and no property" (2006, 43) – in short, none of the landlocked frameworks through which we might make sense of social and spatial terrain.

What then to make of a capitalist mode of circulation that relies on long-distance movements over this watery mass, a mode of circulation anchored in the mobility of 130,000 ton vessels of solid steel, and whose ability to reproduce the relations of reproduction relies on the fluidity of the oceans to project extra-territorial power across vast distances? One way I have been approaching this question has been from the perspective of quotidian life on the ship. Oceanic labor is globalized labor, though this may be banal point to make. More specifically, perhaps, oceanic labor is labor that experiences a sort of double alienation under circulatory capital: while in the classic Marxist formulation, alienation in the space of the factory dispossesses workers of the means of production and of the value that their labor produces, workers on container ships are differentiated from this labor pool in that the spaces they occupy are not spaces of production, but of circulation.

If in the factory machines removed the connection or satisfaction workers might have derived from the production of commodities, thus turning labor profoundly abstract, in the logistics circuit, workers are one more step removed. Containers, in their modular, block-like, homogeneous forms, wall off the goods being transported from those bodies transporting them. The container form, then, renders the containerized commodity utterly illegible to the workers charged with guarding and ensuring their movement.

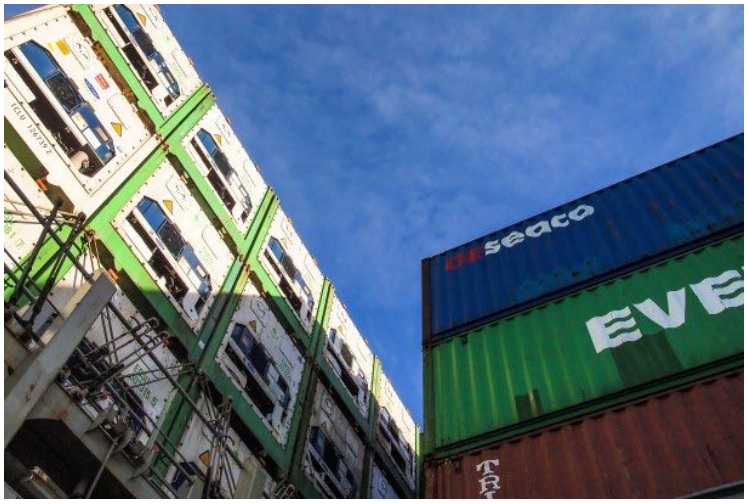

Figure 16: On the left, reefer (refrigerated) containers rise into the air and below deck, carrying fresh and frozen goods to China.

"Do you ever think about what's in those containers?" I ask Able Bodied Seaman (AB) Montez. He shrugs. "No, almost never. Only when I have to check the reefer readings". On one particularly freezing afternoon, I accompany him on one of these duties. With a clipboard and pen, we climb up and down the container bays, and in and out of the cargo holds, laboriously looking for the bay, stack, and location of each listed reefer container, cross reference it with the container identification number imprinted on the container, and write down the temperature listed on the tiny monitor embedded in the door. Reefers are refrigerated containers, holding produce that needs to be either frozen or chilled. Except for the faint smell of apples, interlaced with the stench of heavy fuel oil, and a little notation on the clipboard that lists the type of food being carried, Montez knows nothing of the container's contents – nor does he seem to care – as he weaves in and out of an endless parade of modular steel blocks. Recording all the reefer readings is a process that takes almost four hours, and has to be repeated every day, twice a day.

By the end, icicles have frozen on my eyelashes and our hands are numb. The only containers whose contents are made known to the ship's crew are these reefers, and containers carrying dangerous cargo – a total of not more than fifteen containers listing 'environmental pollutants' or 'marine pollutants' – buried deep within the stacks. Other than that, ships no longer carry shipping manifests, so even the captain has no idea what the ship is moving. I learn from one pilot in Tacoma that the *Ever Cthulhu* is most likely carrying a surfeit of scrap steel and recycled plastic, which explains why the ship has been sitting so low in the water. While on the outbound journey from China to the US, ships are stuffed with manufactured goods being brought to American shelves, but in the other direction, most of what travels east is, the labor theorist Sergio Bologna has noted, "shit and air" – waste products and empty containers. In the end, Montez says of the contents of the containers, rubbing his hands together for warmth, "maybe it's better not to know". Untethered from the production process as a whole, further untethered from the content of the commodities they move across the ocean, the workers on the *Ever Cthulhu* crew neither identify with their jobs nor find connection or interest in the content of the work they perform. The labor of the seaman, subject to the blurred boundaries between production and circulation rendered by the logistics revolution, seems in this sense to be quite literally awash in a sea of flows.

I've started taking other jobs on the ship to get closer insight into the rhythms of the workday. The officers, for their part, have been exceedingly generous in giving me the smallest boiler suit in stock (four sizes too large) and steel-capped work shoes (two sizes too big), and jobs with "minimal danger" so that, in the event of an injury, I do not become an insurance nightmare. Once, walking into lunch in my work wear, the entire

table of officers bursts into laughter. “What?” I ask, smiling. The Chief mate responds: “Let’s just say that if I was a passenger, even if I was doing research on the ship, I would not bore myself with daily jobs like this. In that suit.”

Figure 17: Below deck, two of the engine crew work at cleaning and closing the valves of the main engine’s pumps.

Escaping from the boredom of daily work life is, however, not a luxury the crew can afford. A container ship’s crew is split into two departments: the deck department works all the jobs above the hull in often debilitating weather conditions, scrubbing, cleaning, wiping, painting, de-rusting, and mooring the ship in the fore and aft when it is coming into harbor. Underneath, in the cavernous engine room that reaches eight stories below deck, the engine department toils – like the subterranean industrial society of H.G. Wells’ Morlocks – in stultifying heat and to the overwhelming roar of the ship’s engine.

One of the jobs I’ve worked (more a burden than a help, I’m sure,) has been to clean the engine room’s cooler – a contraption of hundreds of 8 by 4″ aluminum plates pressed tightly together by two thick steel covers – which pumps cold seawater into a tank that then cools by convection the freshwater circulating around the ship’s

gargantuan engine. In four-hour shifts, for twelve hours a day, for four days straight, two workers worked at a time. First, the cooler's walls are pried apart with a hydraulic pump. Each plate is slid down a rail, separating one from the other. While one worker used a brush to scrape the muck of the ocean caught between the plate walls, the other blasts it off with a high-pressure water gun. There are four hundred double-sided plates to clean. Spray, scrape, brush, spray. On and on, hour after hour, the repetitive work starts to become mind numbing, but you cannot afford to wander because the water blaster, at 180 bars, is so powerful that a misdirected spray could cut a finger off. By the end of my four hour shift, I am covered in bits of the sea: little crustaceans, general brown clomps of dirt, and even a tiny silver fish, which the oiler Jonathan grabs and pretends to throw into his mouth.

On one of the days, halfway through the cooler cleaning project, the electrician Yunus alerts the engine department to the fact that there is a giant oil leak in the fuel duct. I wait for the crew to go in and examine the problem, and then crawl into the duct after them. Three ladders below even the lowest level of the engine room, the fuel duct is a tight passageway at the absolute bottom of the ship in the part of the hull submerged underwater, extending across the entire length of the vessel, though not more than four feet high. I step-crawl my way almost 250 meters to the front, where five engine crew are working.

We are in a tight, dimly lit part of the duct from which water is dripping. Below me, separated by six-foot long sections of the ship's steel skeleton, are pools upon pools of heavy fuel oil, jet-black and swirling with water. All this has leaked from a pipe that hasn't been able to withstand the torsion caused by the past few stormy days on the

ocean. The engine crew, rather despondently, is scooping the oil into plastic buckets with the help of a few dustpans and white rags. We crouch on hands and knees, ducking under the leaking fuel pipe that the fitter is desperately trying to repair, and work at clearing the oil in silence.

Heavy fuel oil (or HFO) is the crudest industrial fuel there is, made of a composite of hydrocarbons, the remaining dregs of the oil refinery process. Road tar is made from the same material, but here, over the ocean, the ship guzzles 118 tons of it a day. "Our main engine is a big waste dump", the chief engineer once told me. Above deck, I have seen the HFO exhaust wafting into the horizon, staining the endless blue with a dirty, darkened smoke. Below deck, the oil is so acrid that it fills the back of my throat with a metallic, biting odor. Three hulking bags of blackened rags and six full buckets of HFO later, we are done with the job, but by then, my eyes and skin are stinging, my fingers stained orange through my gloves. It took four rounds of heavy industrial soap to get the poisonous HFO off my skin, and after three washes, the smell of the oil on my boiler suit still fills my room. I get to step off the ship in two weeks, but this is the sort of work that the engine department performs everyday: the tedious, banal, poisonous work of cleaning and maintenance.

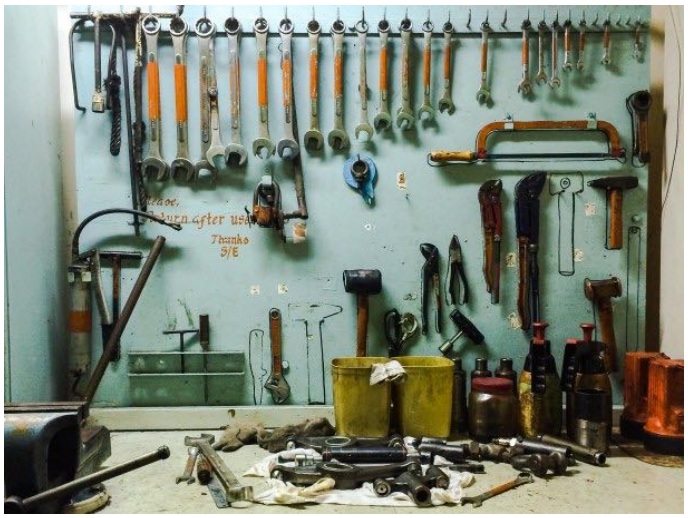

Figure 18: In the engine department, the fixer (ship's mechanic)'s tools of the trade

Adam, the oldest wiper on the ship and a man with a philosophical disposition, encapsulates it this way: "dangerous, but boring. One hundred percent boring". In cycles, each time a ship leaves port, engine and deck crews both rush around the ship to restore and maintain the ship, prolonging its life for as long as possible. Even the idea of 'caring for the ship', however, seldom guides the working mentalities of *Ever Cthulhu*'s crew. Instead, "just follow orders" is the oft-repeated mantra. "Follow orders, finish the contract, go home to your family", the fitter says. The captain has told me of parties and receptions held by chartering companies for the shareholders who hold stakes in the spanking new ships churned out of shipyards in eastern Europe and South Korea every few months, champagne and appetizers poured out for laughing guests. After the glamor of shipbuilding, after the enthralling rush of invention and innovation, maintenance is the leftover, dirty, dangerous but dull work left to the maritime working class. As if caught between immense parentheses, the seaman cannot claim to have built this world, only to help move it back and forth, and back again. Teddy bears and computer parts, shit and

air, revolve around the earth because of the toil of sailors who care not why they are there – only that they will be home soon.

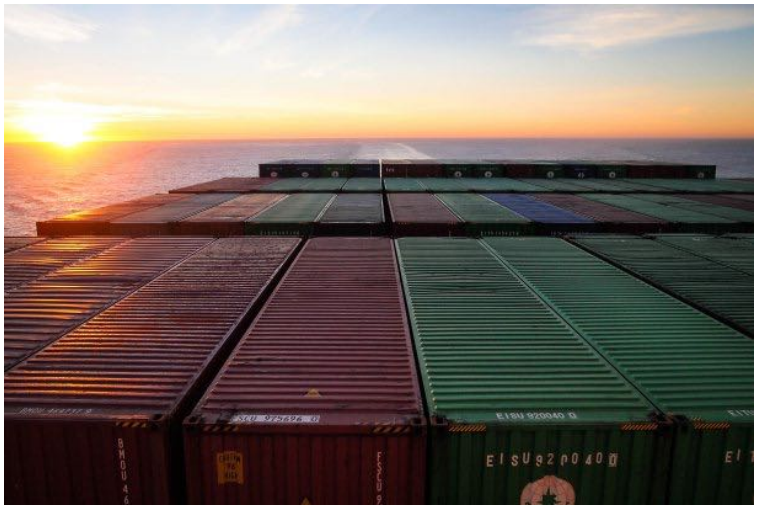

Figure 19: A sunset view of the aft of the ship, somewhere over the Kamchatka Peninsula

Chapter 4.
Labor at Sea: Producing containment and difference in logistics labor

"Going forward and glancing over the weather bow, [… the] prospect was unlimited, but exceedingly monotonous and forbidding; not the slightest variety that I could see."
- Herman Melville, *Moby Dick* (2008)

Introduction

In the evenings, after dark has fallen over the unbroken sky, I have taken to going up to the bridge, the navigational command post of the ship, to keep the night watchmen company. It is a January evening and we have just crossed the International Date Line. Since we set out from the US West Coast across the Pacific Ocean, the captain has set the clock back by an hour every night at 11pm. Because we are sailing slowly across the earth's sphere – like few bodies do anymore – the shifts in time zone have to be calibrated incrementally so that we will gain twelve hours by the time we reach our first stop in China. On the eastbound journey from the US to China, the sailors tell me, gaining an hour every night often extends the work day – a stretching of time unaccounted for in the wage – while on the eastbound journey to the U.S., sailors lose an hour of sleep every night the clock moves forward at 11pm. The effects of these temporal shifts on their working bodies are perpetual: as logistical demands to accelerate the delivery of goods have increased, in the last decade ships have been accelerating the rotation of their vessels so that ships never really stop for a break. They reach one side of the earth, and when schedules go as planned (which they often do not), stop at each port of call often for 24 hours or less, and turn back from whence they came almost immediately. The sailors often describe the effect of these quickened turnover times as a perpetual jet lag, an exhaustion that never really lifts from their bodies. I ask the third

mate one night if seafaring is what he imagined it to be. Joseph laughs, and replies unequivocally: "No." At 26 years old, Joseph has sat for over ten maritime certification exams and tests to earn the position of third mate, fourth in command of the ship. "This is what I always wanted to do," he tells me as we look out over 180 degrees of dark water. "But if I had a chance to go back, I would not be here." We stare out of the windows of the wheelhouse at the vast ocean. "The stories from previous generations all seemed so interesting: no hardships. Everything's ok. You get to see the world. But when I got here, I found that everything is saturated. The six months on board… it's six months of hell. I'm constantly missing home" (personal interview with Third Mate Joseph, January 11, 2015).

Von, one of the youngest crewmembers on the ship, chimes in. At six feet tall, his well-filled frame dwarfs the average Filipino male, earning him the affectionate nickname "big boy." "It's different for the Europeans," he opines. "Their contracts are shorter and they are paid much more, so they are only three months on, three months off. And they are less family oriented, so I don't think they really miss home. We Filipinos, family is our number one. Yet we are on the ship much longer, for six to nine months. We get very lonely and we feel very trapped. But I think Filipinos are built for this work. We are like soldiers. We can withstand a lot" (personal interview with Ordinary Seaman Von, January 11, 2015).

As Joseph's and Von's comments suggest, the spatial mobility attained through seafaring work does not lead to an equalization of wages or other terms of contract. Rather, it is precisely the seamen's mobility that structures their sense of spatial and social confinement on board container ships. Staring out at the Pacific with the two

sailors, I could not help but notice that the same sea that commonly serves as a metaphor for fluidity and exploration is to the seafarers more penitentiary than promise. In their expressions of homesickness and entrapment, Joseph and Von's embodied relationship to the boredom and duration of seaboard labor offer a glimpse into how expanding logistics markets feed on penned up and contained seafaring workforces. Notably, this sense of containment is experienced differentially between laboring subjects. Von's comparison of his homesickness to that of the Europeans' reflects these structures of difference on multiple levels: while he noted the externally determined inequalities of his working conditions in terms of the wage and the contract, Von also mapped his feelings of homesickness and resilience onto internalized notions of essential cultural difference between Europeans and Filipinos.

This chapter foregrounds the cultural and corporeal effects engendered by the rise of logistics. My focus on the affective and structural aspects of seafaring labor derives from a concern with a lack of systematic attention to the less tangible yet equally crucial aspects of the labor process - that of the affective structures of feeling that inform and reproduce alienation on board container ships. While previous critical work on logistics has paid some attention to the effects of logistics' rise on workers' lived experience (Loewen 2018, Gutelius 2015; Cowen 2014, Rossiter 2017), the tendency to privilege institutional and structural factors still dominates these accounts, leaving little room to assess the political implications of seafarers' embodied relation to their work. Little is said about the ways in which the actual people involved in these supply chain circuits, and who are located in the matrices of intersectional inequalities, physically experience processes of intensified circulation and mobility. This is despite the fact that, as many

scholars have noted, structures of governance, surveillance and control almost always operate through and impact the body (Browne 2015) and that these involve racialized, gendered, and classed processes (cite).

As such, this chapter pays attention to the micro-politics of container shipping, in order to refuse an analytical separation between the affective and the economic and social, tracing the multiplicity of agencies and interactions that compose Transpacific supply chains. The market-making mechanisms of container shipping are made possible not only by broad shifts in the organization of geopolitics and geo-economics, but also through intricate labor control mechanisms that confine and hierarchize seafaring labor. These labor processes differentiate workers racially and culturally, and build up ideologies of differentiated masculinities. As I argue, these strategies of labor management are not only externally imposed through the structure of the global labor market; workers also internalize and reproduce culturalized and racialized identity constructions as the basis for their work. As such, forms of identity construction are integral, not external, to the profit making motivations and mechanisms underlying the segmented labor market of container shipping.[48]

I. Theoretical interventions: Seafaring labor as contained mobility

In scholarship and literature about the sea, the archetype of the seafarer often conjures images of cosmopolitan, diasporic subjects traversing the world. A sailor's work implies extraordinary mobility, giving rise to the image of the roaming proletariat who freely

[48] My thanks to Özlem Altan for her discussant comments on a previous version of this paper, which helped to refine its focus and shape the argument I am making here.

moves across territorial borders and cultural spaces. Trans-oceanic social and cultural histories have sought in this vein to understand the ocean as a "unit of analysis" for global crossings (Steinberg 2001), or, in contrast, to explore transoceanic black cultural and political formations made in and through the history of the Atlantic slave trade, such as in Paul Gilroy's treatment of the ship as a chronotope for transatlantic black cultural production and exchange (1995, 15). However, a contemporary ethnography of Filipino and European container ship workers sits rather uneasily within narratives of syncretic and transcultural mobility. It also challenges Linebaugh and Rediker's (2013) depiction of an early Atlantic maritime work culture that fomented inclusive and revolutionary anti-colonial solidarities. Instead, the contemporary maritime labor market reveals a seafaring working class that is structured through the active reproduction of racialized hierarchies. The history of such multinational maritime working classes may have, in certain respects, featured instances of trans-border working class and anti-colonial solidarities. However, as Cesare Casarino (2002) has suggested, the maritime working class not only provided "the prototype of the associative and organized model of wage labor that was to become dominant under industrial capitalism," but also anticipated the multinational, multilingual, and multiracial constitution of labor that so characterizes the global political economy of our present (4). As Ravi Ahuja (2006) has argued, during the rise of steamships and in the course of development of an emerging global labor market in the early 1800s, rigidly racist taxonomies of ethnic segmentation "intensified and consolidated into a defining and permanent structural property of the maritime labor market" (Ahuja 2006, 112).

Taking insight from such social histories of ethnic segmentation in an earlier colonial era, this chapter examines the hierarchies of exclusion and containment that accompany the mobility and global incorporation of logistical supply chains today. Since 1987, the Philippines has been the world's largest supplier of seamen, accounting for more than 25% of the 1.4 million mariners worldwide (Borromeo 2014). Today it is estimated that an approximate 460, 000 Filipinos are regularly employed as seamen, and over 250, 000 work on board merchant shipping vessels around the world at any given time (Department of Labor and Employment Philippines 2014). However, wage differentials in the industry between European and non-European seafarers are still considerable, reflecting wage differentials between the industrialized North and underdeveloped parts of the world (ILO 2001).[49] Whereas Filipino seamen often take seafaring jobs with the expectation that it will gain them economic and social mobility, this chapter finds that interacting forms of political domination and social power reduce their ability to gain the mobility they desire. Instead, seamen are subjected to regimes of labor market segmentation that actively reproduce and intensify wage differentials, terms of contract inequalities, and racial hierarchies between European and Filipino seamen. Despite the extraordinary movement of seamen across global space, Filipino seamen's trans-territorial ability to travel has not led to them surmounting the social and economic barriers that separate their occupational group from their better-paid European colleagues. Instead, barriers between European and non-European sailors are maintained

[49] Unfortunately, I was only able to find a statistic on wage differentials from 2001, when the monthly earning of an average German Able-Bodied seaman was $5758 and an average Filipino AB was $1272. There have been no reports on wage differentials in any ILO annual reviews since that date, and I cannot speculate as to why. Although there is an International Labor Organization minimum wage rate, which was raised to $614 monthly in 2015, shipowners have the ability to sidestep labor regulations by switching flags to an open registry. This move is often made to reduce the cost of hiring seamen.

through both external labor market conditions and internal reproductions of logics of difference.

Why has the shipping industry not been forced to level out maritime labor market disparities, despite increasing trade-union pressure? In what ways do these forms of segmentation and differentiation play out in the quotidian working lives of seamen? As I argue, a defining condition of seafaring work is the segmentation and confinement deemed necessary to maintain the mobility and efficiency of containerized shipping and the supply chains of which they are part. In the logistical age of an accelerating and expanding capitalist world market, the intensification and acceleration of circulatory regimes simultaneously results in the proliferation of working conditions and spaces that are constricted and contained in both spatial and social terms. As global supply chains are restructured according to the demands of just-in-time management, one overlooked outcome of demands for speed and efficiency is their effects on the seafarers responsible for moving ninety percent of the world's traded goods across the oceans. The circulatory regimes of capital that the labor of seafarers enables corresponds to their simultaneous confinement and exclusion, both in terms of their spatial and social mobility.

The seafarer's role in the making of global capitalism is deeply under-appreciated, though this is not a surprising fact: Sailors have hardly, after all, been the prototypical figure of either the citizen or worker. Since the late nineteenth century, it is the male wage worker in the factory who has metonymically stood in for the face of the working class as such, and the shop floor the primary terrain of class formation. For Marx and Engels, the heterogeneous composition of working life, which spanned multiple forms of production from sharecropping and slavery to wage labor, posed a challenge for

socialism. If social democracy was to be based in the daily struggle of workers, it would require uniting a multitude composed of different races, nationalities, and genders, through a single subject of the working multitude. For them, this figure was the Manchester industrial worker. Thinking through that worker's particular problems and struggles, Marx and Engels could wager that the stakes of working class struggle consisted in contesting the rampant exploitation and huge concentrations of wealth that were pooling in the English factories. In this way, the lived experience of the male factory worker came to represent the whole history of working class-formation, and his struggles came to take strategic priority over others.

This focus on the industrial worker has had two consequences that I complicate in this chapter: First, to argue that not only the factory, but also the ship, is a site central to the making of global capitalism, and second, to argue that the seafaring labor niche offers an important way to complicate economist accounts of exploitation.

The first is that socialists privileged the shop floor as the primary terrain of class formation. The factory became not only the forefront of class antagonisms where the most ardent battles were fought, but where workers as such, as an entire class, were understood to enter into world history. The factory was not only the site from which surplus value was ultimately created, but also provided a strategic base for the articulation of class antagonisms, since the shop floor was where the largest number of workers were gathered. Witnessing the unprecedented number of workers that the industrial revolution brought together, Karl Kautsky famously theorized: "All the conditions of modern production tend to increase the solidarity of the laboring classes…Today it often takes scores, or even hundreds, to produce a finished product.

Thus does industry teach co-operation" (Kautsky 1888, chapter 5, section 5). Industrialization, socialists theorized, would eventually lead to the homogenization of industrial wage workers through the linking of a shared experience of exploitation.

Yet, this theory that mass production would provide the basis for the leveling of difference was always largely a strategic approach, conceived as a lever from which to foment broader solidarities, rather than a reflection of actually existing heterogeneities of identity and wage labor. Both on the shop floor and elsewhere, in the spheres and branches of production that supplied material to the industrialized factory, the vast diversity of waged and unwaged labor that supported the work of mass production far exceeded the figure of the male waged worker.[50] Left out of view were the long-distance networks of maritime trade that enabled the growth of the British economy, and that would set in motion the rise of industrial capitalism. As Kenneth Pommeranz (2000) demonstrates, while the colonial mobilization of raw materials was essential for the vision and materialization of global capitalist structures, the significance of colonialism in the history of capitalism moves beyond simply amassing material supplies. More importantly, colonial empire set up a constellation of networks that provided the infrastructure for imagining and experimenting with new ways of organizing social production for profit. Between the fifteenth and eighteenth centuries, as Britain's overseas empire grew, and with it the national debt that funded colonial wars, the country needed a

[50] One productive strand of literature that challenges these homogenizing narratives is social reproduction theory, which proposed that a considerable amount of work outside the factory, in the social sphere, was required to ensure those wage workers could return to the factory fed, rested, and healthy. The labor that went into sustaining and replenishing labor power is social reproduction. For the purposes of this dissertation, social reproduction is outside the ambit of my focus, but it shares important resonances with my attention to the sphere of circulation, and should for this reason be marked. See, for e.g. Fortunati 1995, Federici 2012, Weeks 2011.

system of trucking from which long-distance markets could develop. Where carriers had to halt at natural stoppage points such as fords and river heads, ports developed in order to facilitate the transshipment of goods. The markets that developed out of this global maritime infrastructure allowed the British to further consolidate long-distance monopolies over sea-borne trade routes.

Driven by what Giovanni Arrighi has called the "competition for mobile capital" (2010, 12), this colonial quest to extend technologies of control into the distance prompted innovations in shipping technologies. As Fernand Braudel notes, only the exchange of heavy goods, "guaranteed by de facto or de jure monopolies, made the luxury of large tonnage ships possible" (1981, 423). In the nineteenth century, the largest question that consumed states and markets was how to make things travel over long distances (Mitchell 2013). Ships helped form a world of calculation, circulation and control of which the doctrines of mass industrialization became a part. The infrastructural linkages between the ship, port and factory - and back again - provided the concrete material conditions from which the industrial wage worker could emerge as the central figure of proletarian struggle. The centrality of maritime trade to mass industrialization thus highlights the crucial role that oceanic mobility played in the construction of the political subject of the wage laborer. For these reasons, those interested in questions of labor and political solidarity must also seek to understand the shifting configurations of the spatial reorganization of production, so that the possibilities for organizing against the conditions of capitalist exploitation are not only limited by the factory walls but take into account globally uneven systems of production and distribution. A politics of transnational labor solidarity would be incomplete without it.

In an effort to move us beyond the static factory towards thinking about work in the disaggregated, globally stretched, 'factory on wheels', I suggest that this multi-scalar dynamic is especially visible by focusing on the ship as a crucial site of class formation, and the diverse scales of global, national, and transnational labor markets that it pulled into the work of capital circulation. Recall that in chapter one I argued that the logistics revolution helped to globalize capitalist processes of circulation by organizing the entirety of supply chain systems around reducing the turnover time of capital. With the globalization of production, the vast spatial distances that separate goods from their markets becomes a problem for capital, which seeks to reduce the time taken between the production of a commodity and its realization. For this reason, Marx posits that a change in location can constitute part of the production cycle, since a ship carrying cargo to a market where it can be sold for a higher value is providing a direct link between the commodity's latent value and its circulation into the money form. In this sense, the ship can be thought of as a kind of factory, and the seafarer as a figure of labor power central to the making of the global economy.

The ship is a particularly important site for study because it is a contact zone of both forms of political and economic exploitation and cultural intermixing. As Paul Gilroy has posited, ships are "modern machines that are themselves micro-systems of linguistic and political hybridity" (1993, 12). Fractal patterns of cultural and political exchange under capitalist transformation cannot be encapsulated by national approaches. In response, Gilroy employs the figure of the sailing ship as the basis of a wider set of methodological propositions that theorists can challenge the integrity of the nation state if they take the Atlantic Ocean as one single, complex unit of analysis used to "produce an explicitly

transnational and intercultural perspective" (ibid, 12). Ships were, Gilroy argues, "the living means by which the points within that Atlantic world were joined. They were mobile elements that stood for the shifting spaces in between the fixed places that they connected. Accordingly they need to be thought of as cultural and political units rather than abstract embodiments of the triangular trade" (1995, 16).[51]

Drawing insight from this account, we might say that the container ship today provides a useful chronotope for studying the Pacific Ocean as a place for the reconfiguration of global production, not only in terms of the spatial relations it sutures between producing and consuming markets, but in terms of the social and cultural differences the ship's micro-political system reveals and amplifies.[52] At the core of Gilroy's study of Atlantic cultural production was the slave trade and the plantation economy, two forms of domination from which transoceanic black cultural formations emerged. Today, however, the ship is a chronotope not of shared cultural formations in resistance to histories of domination and oppression, but of ethnic segmentation along European and non-European lines, which reproduce themselves in conflictual rather than syncretic ways. Contemporary seafaring labor is a segmented labor market, split between Europeans who primarily serve as officers, and 'ratings' who are mostly from the global South or the Philippines. An ethnography of these spaces produces a different kind of

[51] It should be noted that Gilroy's emplotment of the sailing ship onto the Atlantic Ocean does not seek to simply celebrate cultural hybridity, but is a response to European forms of cultural production that seek to fix the racialized other as an object of its knowledge. That the Atlantic Ocean evokes the middle passage of the slave trade is crucial to this account, in that Gilroy understands the experience of transnational black modernity through both the utter violence of enslavement, and the cultural intermixing that occurs as a result.

[52] Via Gilroy, chronotope here refers to "[a] unit of analysis for studying texts according to the ratio and nature of the temporal and spatial categories represented…The chronotope is an optic for reading texts as x-rays for the forces at work in the culture system from which they spring" (Bakhtin 1981, 426).

chronotope: one forged in the racialized production of containments and hierarchical difference. As such, this chapter sees the ship as a contact zone for multiple scales at which global circulation is reorganized, articulating how global, national, and local factors give birth to confined and segmented labor regimes and workplace relations.

The labor of seafarers plays a crucial role in this constitution. Though often invisible to us on land, the seafarer spends his or her life suspended across the ocean, shipping goods back and forth from manufacturing centers to marketplaces of consumption. While not directly responsible for the creation of surplus value per se, seafarers nevertheless produce a change in location that allows those commodities to be realized in the money form. In addition, since containerization, the organization of the labor process on the ship has been restructured to aid the quicker turnover of cargo, so that seafarers often feel intensified feelings of confinement, exclusion, and acceleration. As innovations in international shipping created the conditions of possibility for globalization and offshoring and prompt the expansion of ship sizes, ships increasingly rely on a startlingly small number of workers to transport these staggering volumes. The sheer value of goods under seafarers' care thus means that logistical drives to reduce the labor force also concentrate unprecedented amounts of capital in the same critical location, and in the hands of a few workers. In this sense, as a counter to the unprecedented number of workers gathered in the factory in the pre-automation era, the ship might more accurately represent contemporary capitalism's reliance on segmentation and partitioning as ways to manage the workforce.

This brings me to the second way in which the study of containerization and seafaring complicates the centrality of industrial waged work to capital accumulation.

Because supply chains link up heterogeneous segments of labor and dissimilar corporations as they draw on an international labor pool, supply chain labor processes often incorporate multiple scales of class, gendered, racialized and cultural differences. These diversities that supply chains draw into their ambit challenge the orthodox Marxian definition of exploitation. Exploitation has a precise definition in Marxian thought: although in some cases Marx uses the term generally to refer to making use of objects for their potential benefits (e.g. Marx 1976, Ch. 15), Marx more specifically understands exploitation to occur when one section of the population produces a surplus that is in turn controlled by another section of the population – a surplus that is the result of the wage labor relation, by which the producer's wages are less. Under the historical stage of capitalism, Marx posits, exploitation occurs when the class of industrial capitalists extracts surplus value from the working class, whose only ownership is of their labor power. Historically, as the system of industrial capital became more entrenched, one could only rely on selling one's life activity in order to secure the necessary means of subsistence. To define exploitation in this way, however, Marx has to posit that extra-economic forms of violence and oppression are temporally prior or functionally extraneous to the logic of capital. The fact that most Marxists take this definition of exploitation as their default position poses a problem, since it brackets race, gender, and sexuality to be outside the fundamental capital relation. A variety of interpretative traditions have since sought to show that structural racism, the abjection of feminized labor, and other forms of oppression are constitutive features of surplus value extraction.[53]

[53] See for e.g. Cedric Robinson 1983; Ruthie Wilson Gilmore 2007; Walter Johnson and Robin Kelley

Supply chains offer a particularly effective site through which to understand these dynamics. Shipping companies, under a flexible set of maritime labor laws, seek to reduce their operating costs and enhance their efficiency by hiring and contracting seafaring labor on the basis of uneven processes of labor market segmentation. In so doing, shipping companies populate their ships with a labor pool shot through with heterogeneities of language, religion, race, culture, and nationality. Conflicts and ambivalences on the basis of perceived or explicit cultural and material differences do not only pre-exist their time on the ship, but are augmented in and through the spatial and political organization of their work. As Anna Tsing has argued, this diversity is a problem that supply chain capitalism constantly wants to resolve: "because they link up dissimilar firms, supply chain capitalists worry about diversity, and their self-consciousness is what makes it easy to show that diversity forms a part of the structure of capitalism rather than an inessential appendage" (2009, 150). Quite ironically, then, because they rely on the international division of labor and open registries to hire from a diverse international pool with variations in wage rate, language skills, and qualifications, shipping corporations have to manage and resolve the very differences they invite into their structure. Following Tsing, this chapter approaches 'diversity' as a political problem that logistics capitalism seeks to simultaneously eliminate and exploit. As seafarers work in logistics networks through a highly uneven process of incorporation, I found that difference more frequently served as a disciplining tool rather than as a site for creative solidarities.

2017; Nancy Fraser 2009; Rosemary Hennessy 2000; Busia and James 1993; Angela Davis 1981; Federici 2004. This is far from an exhaustive list, of course, and is meant to indicate a sampling of the vast array of perspectives within these varied traditions.

To understand how diversity becomes essential to the logic of capital circulation, I suggest that in addition to an analytic of exploitation, we also understand seafaring labor through the lens of "superexploitation." Drawing from Anna Tsing, superexploitation is "exploitation that depends on so-called noneconomic factors such as gender, ethnicity, nationality, religion, sexuality, age, and citizenship status. Superexploitation is exploitation greater than might be expected from general economic principles" (2009, 159). By using the term superexploitation, Tsing means something distinct from the way the term is employed in world systems and dependency literature to refer to systems of global labor arbitrage. In that usage, dependency theorists such as Samir Amin argue that exploitation occurs not only through the expropriation of working class labor by the propertied class, but also at a planetary scale, where capitalism's worldwide spread reproduced and deepened the contrast between dominant centers and dominated peripheries (Amin 2010) leading to 'super-exploitation' on the basis of different wage developments in the peripheries.

Tsing's conception draws from this basic understanding that super-exploitation is exploitation on a world scale, but argues that supply chain capitalism, by virtue of its hyper-mobility, is so structurally reliant on pitting different national labor pools against each other that it "encourages conflations between superexploitation, in this sense, and self-exploitation." Workers contribute to the blurring between super and self-exploitation because it is *the performance of their difference* that brings them contracts *and* "makes it difficult for them to negotiate the wage outside niches for gender, sexuality, and race" (Tsing 2009, 159). The ways in which workers establish their economic performance through the very factors that establish their superexploitation becomes clear on board the

ship, where ethnic and cultural differences are mobilized and re-performed by workers as a way to justify their niche in the labor market. The challenges of labor organizing in sectors along the supply chain thus have everything to do with the gender, ethnic, and national niches actively encouraged by logistical supply chains, rather than the failure to negotiate the wage as "abstract" labor, in the manner imagined in much of both Marxist and neoclassical economics.

Superexploitation is thus a helpful analytic for understanding the uneven distribution of global capital because it foregrounds the ways in which affect and subjectivity play key roles in the entrenchment of segmented labor markets. Dominant tendencies to view work through abstract methods of valorization tend to flatten the character of those who perform the work of distribution to automatons and machines, as if the agency and subjectivity of logistics workers bears little effect or resistance to their modes of exploitation. Sandro Mezzadra and Brett Neilson, for instance, suggest that as logistics seeks to organize the turnover of capital to maximize the efficiencies of transport, it becomes a key avenue for understanding the "refined and abstract methods and paradigms of valorization" implicated in the operations of logistics capital (Neilson and Mezzadra 2015, 5). Cuppini, Frapporti and Pirone have likewise argued that logistics' abstracting tendency "works to transform the logistics laborer into something like a drudge, and android, a working machine" (Cuppini, Frapporti, Pirone 2015, 22). Even as such narratives insist on viewing logistics as a "site of power and struggle" (Neilson 2012) they nevertheless miss an attention to the ways in which logistics acts as a complex biopolitical apparatus, working in various ways to use 'diversity' to adapt heterogeneous sets of workers to thoroughly alienating environmental and productive conditions.

On these registers, we are missing a theory of logistics labor that recognizes the abrupt, conflictual, and fluid reconfigurations of affective arrangements and subjectivities that aid the expansion of global logistics networks. The increasing enlistment of workers into systems of distribution should thus not only be understood as another stage in the flexibilization of accumulation, but as a process of logistical containment that enlists social difference and subjectivities into the exploitation *and* subjectivation of the international division of labor. Following Anna Tsing, I argue that logistics brings these two strands - subjectivation and exploitation - together. As she argues, supply chains are intertwined in new figurations of labor power not merely by *using* pre-existing diversity; they also "revitalize and create niche segregation through advising economic performance" (Tsing 2009, 50). An embodied approach to the spatial organization of seafaring work thus connects social differentiations of laboring bodies with the labor division taking place along the geographical lines of the transnational supply chain.

Thus, I turn my attention in this chapter to a micro-political analysis of how the transnational reconfiguration of logistics distribution influences its labor politics, bringing the macro field of global economy together with the micro field of maritime labor market institutions and workplace relations (Frenkel 2003, as cited in Pun and Smith, 2007, 28). Forms of segregation aid the process of superexploitation by utilizing niche-based conflicts of identity and interest on the basis of race, gender, and national status. An attention to these forms of difference allows us to better understand both forms of abstraction and standardization inherent to logistical practices, and forms of fragmentation and niche-segregation that widen gaps between North and South, organized and unorganized labor, and across lines of culture, race, and nation.

Three processes of logistical regulation

The title of this chapter - "labor at sea" - designates the multiple ways in which "floating factories" such as the *Ever Cthulhu* embody logistical labor regimes on three registers: labor is 'at sea' literally, where the material space of the ocean itself shapes the processes of labor arbitrage through which shipping companies recruit seafarers; labor is 'at sea' in terms of sense of confinement and exclusion seafarers feel as a result of long periods of suspension over the sea; and labor is 'at sea' in its hypermobility, producing performances and rationalizations of difference by pitting workers against each other through the uncertainty of continued contracts. Ironically then, in signing up to transport goods over vast distances, logistics laborers travel across the earth's surface while trapped in confined locales. In thus concentrating and circulating labor in maritime logistical networks, this 'floating factory' labor regime represents a powerful labor management regime that fuels the extension of supply chains in the world economy. I chart three forms of logistical regulation, both formal and informal, that reinforce the confinement and segmentation of the maritime labor market. These three process overlap and reinforce each other.

First, I ask how the labor process on board a container ship defines and intensifies the containment of its seafarers. Regimes of work on board the ship produce intensified feelings of homesickness and containment for the majority of seafarers, who experience these affective and psychological states as an integral element of their exploitation. This intensification occurs because the shipping industry has sought to consolidate through the construction of increasingly large container ships - a process I laid out in chapter three -

while endeavoring at the same time to reduce the workforce per ship. Mental health risks, too, are borne out unevenly, since the length of the European contract is half that of the Filipinos, subjecting the latter to longer months on sea, and thus prolonged experiences of displacement and containment. The high capital intensity of large megaships, as well as increasing demands to make ships' journeys more efficient, have fundamentally transformed the rhythm of seafaring. Extended layover days in port are now a thing of the past, deemed no longer necessary nor economically viable. Combined with the constant ocean-crossing rotations of the ship, the increased demands to take on security roles described in chapter two, and the length of seafaring contracts, a seaman's work is now defined by few breaks, chronic sleep deprivation, and longer periods of confinement in the narrow spaces below and along the deck.

Second, technological and economic compulsions to increase the rate and mass of capital circulation have met with particular success in the maritime industry because corporations draw from a structural environment constituted by capital's geographic mobility and the leniency of maritime labor law. Paradoxically, as capital's mobility incorporates diverse ethnic, national, gender, and class identities into the seafaring labor market, what results is a form of labor segmentation that reduces seafarers' potential for upward mobility. Wage and length-of-contract differentials between European and Filipino seamen are consistently defined hierarchically through an unevenly applied set of national and international regulations. Although several international organizations including the International Maritime Organization and the International Labor Organization have set a recommended basic wage for able-bodied seamen, the structure of the maritime labor market is particularly subject to downward pressure and uneven

segmentation due to the particular characteristics of maritime labor law, where shipping companies operating across international waters are able to "flag out" of the state in which ships are owned, and to hire personnel based on the different labor laws of labor-supplying countries. Not all companies choose to flag out, however. Because the International Maritime Organization condemns flags of convenience on ethical grounds, flagging out is often seen as a loss of prestige. Many of the largest ocean liners remain flagged to their home countries such as the UK, Sweden, or Germany, and are subject to national labor laws in that context. These laws often have manning requirements that stipulate the number of officers who must be of that nation's nationality. For example, countries with a Norwegian flag are required to have a captain with EU nationality, while a Chinese flagged ship stipulates that all crew must be Chinese (Japan Marine Center 2012, 1). On such ships, these national labor laws create a split labor pool in which the shipping liner hires a minimum number of European officers while outsourcing the hiring of the crew to a manning agency in the Philippines or elsewhere.

The implications of this practice are that hiring and contracting practices build upon spatially uneven processes of labor market integration under capitalism, where shipping companies exploit this unevenness in order to structure contract and wage differentials under varying national labor standards. This creates a segmented labor market (Bonacich 1972) between Filipino and European seafarers, in which companies exercise their hiring preferences based on wage differentials, pitting national labor supplies against each other by drawing on the large labor surplus in the Global South.

Third, even as labor market conditions and the labor process itself produce uneven variations in seafarers' exploitation, a crucial factor in the maintenance of these

differentiations lies in powerful institutions and their extra-legal role in processes of identity formation (Smith 2003). Ship-owners and national governments both promote and differentiate labor based on specific social and cultural attributes because they serve functionally to secure niche labor markets (McKay 2007b). As I show, these categories of differentiation are cast as objective facts in order to recruit labor into identifying with such attributes. In so doing, external forms of differentiation become mapped onto seafarer's identities, so that seafarers internalize perceptions of cultural, gendered, and racial difference as the key determinants of their labor niche. These rationalizations map essentialized assumptions about masculinity, racial superiority, and national identity onto their perceived 'strengths' and 'weaknesses' as workers. Thus, rather than approach identities and difference as structures only external to the laboring subject's abstract capacity to labor, this chapter argues that internalized forms of difference become integral to logistics capitalism, rather than an inessential appendage (Tsing 2009).

Taken together, these three factors of logistical regulation - labor intensification, maritime labor law, and informal practices of identity formation - form an overlapping matrix that maintains downward pressure on the maritime labor market that is essential to circulation capital's functioning. In this way, the glorified processes of globalization, and the annihilation of space by time brought about through the expansion of container shipping, go hand in hand with the containment, confinement, and segmentation of maritime social spaces. Capital, in other words, employs bounded labor in order to flow unbound, making the ship as much a crucial site of analysis for understanding the circulatory regimes of global capitalist markets as the factory or the plantation.

II. "Floating Alcatraz": homesickness and containment on board the container ship

The third mate's seafaring career began with a desire for basketball shoes. "When I was really young, I saw these guys coming home – seamen from my province – and they looked really amazing. I thought to myself, 'wow,'" he shares one afternoon as I stand with him on the bridge for a chat. "They had these fancy dresses, basketball shoes… at that time I really liked basketball, so when I saw those shoes, I said, 'ok, I want that too'. The other men in my town, they were not the same. Even if they had a higher degree of education, they didn't have those things the seaman were having. So I thought, why study those courses the other guys are studying when I can go with being a seaman?" His family didn't approve: two of his uncles were seamen, and warned him that it would be a very hard job, and very painful – especially if he had a family. One cousin had died on board a vessel that had sunk over the Atlantic. "But I do whatever I set my mind to," the third mate says, and so on he went to attain a Bachelor of Science in Marine Transportation – the college degree most often required to vie for a good seafaring job in the Philippines. Only two of the crew members on board the *Ever Cthulhu* do not have a bachelors' degree. "By my second voyage I already knew they were right. This loneliness - you cannot imagine it when you are on land."

This is a story I've heard multiple iterations of in the past weeks. While swabbing the deck, sitting in the recreation room playing poker, or cutting up rags in the machine workshop, these men have shared the stories of how they came to be seafarers. There is the imagined life, and there is the devastating reality. Ask almost anyone if they enjoy their job, and they will tell you no. The ones who say yes, when pushed for a reason, will explain: "it's because of the pay." There is no intrinsic attraction to a life at sea; only to

what it makes possible: AB Rodriguez has a bedridden mother he provides for in addition to his wife and two kids. AB Montanez keeps requesting to extend his contract so that he can save up to provide for his daughter, who is graduating from university in March. The fitter Ocampo has a machine shop in Manila that went out of business, consigning him to nine years on the ocean to provide for his family. "I'm not a seaman; I'm a mechanic!" Ocampo exclaims. "This is not where I'm supposed to be."

Homesickness is "always there," the fitter tells me, manifesting itself in picture collages of families on cabin walls, frequent coffee break talk about their wives and children, and emails home twice a day.[54] At night, the crew gathers in their recreation room, where they smoke cigarettes, play poker with makeshift rubber chips, and watch re-runs of Filipino TV soaps and variety shows, which they get on $1 DVDs from the seaman's mission in ports. On Sundays, a warring basketball game is played between the engine and deck crew on a half court in the lower aft of the ship, the crew yelling when misdirected throws threaten to bounce the ball into the open sea. Almost all recreational activities seem to be reconstructions of life at home in the Philippines. The longing is so acute that the ship is often characterized as a floating prison – "Traveling Alcatraz," as the oiler Ryan puts it. They will tell you that walking up the gangway with their baggage at the start of their contract is the heaviest feeling, and going down when their six month contract is over is the most joyful. "The gangway is our pathway to freedom," says Von as we scrub rust off the deck's floor on one quiet day at sea, "and also our pathway to prison."

[54] The ship has a satellite internet connection that has no access to the worldwide web, but is able to send emails that do not exceed 10 kilobytes in size.

In these accounts of life on the ship, seafarers' feelings of homesickness are inextricable from both the alienation of seafaring work, and the sense of spatial entrapment this labor engenders. Seafaring is by occupational design a job that requires permanent itinerancy: sailors sign up for a life at sea knowing they will be away from family and home for six to seven months at a time. Unlike other contexts in which the concept of homesickness is evoked - such as under conditions of exile or migration - the seafarer's homesickness results not from a permanent displacement, but from repeated (and often traumatic) departures from home, driven by the compulsion of the labor contract. Earlier writing about seafaring life in the mercantile era no doubt features such feelings of homesickness prominently. Yet the working conditions of seafarers today depart in significant ways: global pressures on ship mobility and speed, reducing turnaround times and crew sizes, and increasing working hours and lengths of time aboard have contributed to labor intensification in ways that exacerbate seafarers' sense of exclusion, isolation, and confinement. The homesickness that results must thus be considered in light of the sense of detention and confinement that globalization processes elicit.

Scholars have sought to understand homesickness in terms of the literary or psychoanalytic subject (Peres da Costa 1999, Robbins 1983); migration to metropole states (Hage 1997, Sullivan 2013, Matt 2014); or in relation to states of exile and displacement (Said 1979, 1983), but rarely as a direct product of workers' alienation in a capitalist society. Yet, the homesickness of seafarers highlights a fundamental contradiction central to global capital circulation. The imperative of capital flight, while seeking to deterritorialize production on a global scale, simultaneously requires

workplaces that are set in place in specific and concrete locales to ensure that capital circulates within a given time frame (Harvey 2001). At landed sites of production such as the mass factory, this contradiction manifests when hyper-mobile capital finds itself in contestation with the spatially-embedded labor whose surplus it expropriates. The "spatial fix" of these labor processes are expressed in specific locales through the role of the state, local cultural particularities, and other context-specific arrangements of class, race, and gender (Harvey 1982, 416). However, these elements significantly shift in the container shipping industry. If, as I have outlined earlier in this chapter, the ship is a floating factory whose commodity produced is a 'change in location,' then seafaring labor occupies a unique space in the global labor market: labor is not embedded in the concrete factory as the spatial fix to mobile capital. Rather, seafaring labor is the labor that is *essential to making capital hyper-mobile*. By producing a change in location, sailors sign on to the expropriation of not only the surplus value that their labor produces, but also their relationship to home. In other words, the temporal and spatial regime of container shipping requires both exploitation and an extended displacement from home as a fundamental condition of the job.[55]

My argument here adds a crucial dimension to prevalent depictions of the logistical economy as leading to the overall flexibilization of labor, in that a focus on transportation workers highlights the increasing *containment* of the workers essential to producing capital's physical mobility, rather than to their increased mobility. For many scholars of political economy, flexibilization marks the shift from Taylorism and Fordism

[55] While it is not within the scope of this chapter, a useful comparison might be made to long-distance transport workers in other sectors such as truckers and rail operators, who are often away from home for extended periods as well, although not often for as long as the seafarers' six to nine months

- where mass production and mass consumption were the key determinants of the labor process - to a post-Fordist era in which employment relationships do not depend upon or encourage longevity (see for e.g. Brenner 2002; Beck 2000; Rosenberg and Lapidus 1999). Flexibilization builds on deregulation, privatization, and the withdrawal of state intervention to pave the way for quick adjustments in production methods, as firms confront increasingly competitive commercial markets (Harvey 1992). This hastens significant temporal and spatial changes in the organization of work, in which work becomes contingent and casualized, not only in terms of its short-term or episodic nature, but also in the sense that the stability of attachment between the firm and the worker are loosened (Harvey 2006; Fraser 2003; Coyle 2005; Taplin 2012). These 'loosened' attachments pave the way for companies to mobilize the discourse of flexibility into a neoliberal project, in which work flexibility is promoted as a positive mechanism, allowing for greater 'work-life balance' and 'family-friendly' working conditions (Pillinger 1998). As David Harvey puts it, forms of social solidarity that would hinder market flexibility are dismantled, "in favor of individualism, private property, personal responsibility, and family values" (1992, 23).

In the carrier and transportation functions of the global economy such as trucking and shipping, this narrative of flexibilization as a positive mechanism is much more difficult to promote. Here, the apparent "freedom" afforded by flexibility is exposed as a ruse, since what is required is workers who can move goods across long international distances, over sustained work periods of weeks and even months. The demands of transportation work thus burst the illusion that a 'healthy' work-life balance is possible. More salient for logistics carriers is the willingness of logistics workers to subject

themselves to containment in truck cabins and ships for extended periods of time, and a form of labor capture that provides access to low-cost labor reserves, without allowing a longer term accretion of labor institutions that might lead to better working conditions or to labor solidarities. In interviews and conversations with seafarers, there is an acute recognition that flexibilization relies on a temporal-spatial regime of confinement that intensifies the pressures of work, rather than diminishes them (Green 2001).

Take able bodied seaman (hereafter AB) Monton as an example.[56] Monton describes the lead-up to his career as a bait and switch: "When I was still studying for a seafaring career, all we hear are beautiful stories that comes along with working on the ship. Nobody tells you about the loneliness. And then, once you are on board, it's too late. You cannot escape." Here, the transversal mobility of the ship is often dangled by manning agencies and maritime degree programs as an occupational perk. In one interview, ordinary seaman (hereafter OS) Clement showed me the photo of his father that he brings on every seagoing trip. In it, his father stands beaming against a sunset-lit Golden Gate Bridge. "This photo made me want to become a seaman," Clement said. "My dad told all these stories of beautiful mountains, beautiful places, and I thought, this is what I want: to see the world. Of course I didn't know I would just be seeing metal containers and the vast ocean." These stories underscore the way in which employers dangle myths of flexibility and freedom in an effort to consolidate their labor niche in a competitive global labor market. As they mobilize the romanticized myth of the freely roaming sailor to attract Filipinos to the job, manning agencies and maritime schools in

[56] Abled bodied seaman is a deck crew member, ranked above the lowest ranked ordinary seaman, and below the rank of officer.

the Philippines are acutely aware of what Andrew Herod terms capital's geographic power (1998), which works such that "employers may use variations in conditions across the economic landscape as a source of economic and political power to whipsaw workers in different places against each other" (1).

For shipping companies, this is achieved by capitalizing on the enhanced mobility of labor achieved by a competitive labor market in which various underdeveloped nations seek to make their labor more attractive to foreign crewing companies in particular ways. In this respect, maritime shipping is particularly positioned to gain continuous access to lower-cost labor reserves from around the world, since the often malleable parameters of international maritime law and the hypermobility afforded by waterborne "floating factories" allows them to shift hiring practices from one country's labor pool to the next, switching contracts with manning agencies and shifting to lower-cost labor reserves in one nation once wage demands and collective organization increase in another. The next section expounds on these broader labor market conditions in more detail. For now, it is important to register how these structural imperatives intensify working conditions on board container ships. In order for supply chains to respond to the just-in-time demands of global commercial markets, they must not only link factories to stores through new scales of the economic, but also through new economies of scale, in which mass distribution and spaces of work and residence are extensively reconfigured for capital accumulation on a global scale. In doing so, the spatial confinement and perpetual homesickness of seafarers become part of the logic of capital accumulation: as container ships grow in size to capture these economies of scale, they have also sought to reduce crew sizes, extend the work shift, and extend the length of the seafarer's contract.

Homesickness is thus not a psychic or affective state external or incidental to the process of circulation, but a necessary byproduct of the demands of capital mobility. Thus, while flexibilized models of capital accumulation depress wage demands through "non-standard employment" (Kalleberg et al 2000), and capitalize on myths of the liberation of the worker from the contract, logistical models of distribution work depress working conditions by depending on the deterritorialization of production and distribution, requiring the *containment* rather than flexibilization of workers in constrained and containerized spaces for long working periods.

The combination of homesickness and confinement becomes particularly clear in the engine room, where half the crew, trained as oilers, technicians, mechanics, and engineers, work in the bowels of the ship. To get there, you first put on a boiler suit and noise-canceling headphones in the entry room, then proceed down 2 steep flights of stairs, past ballast tanks and the lower deck, into an open space known as the citadel. There, the heavy thrumming of the enormous ship engine, with its fourteen cylinders and 107, 000 horsepower, rises three levels into the cavernous, cave-like space. The chief engineer tells me that the engine is as large as his church in southern Germany. But there are no windows here. Only the intense heat of the opening and closing valves of the engine, the blast of the furnaces as they consume over 200 tons of heavy fuel oil a day, and the unmistakable smell of diesel and metal in the air. While working alongside the seafarers as an honorary member of the crew, half my days have been spent in the engine room. Not being trained for much of the work, my assignments have been simple: cutting old t-shirts into rags that mop up the oil, following the oilers Jayson and Madelo around as they survey the oil stocks, or, as the interlude that preceded this chapter depicted,

cleaning tanks and mopping up leaks. The difference between deck work and engine work is palpable: with no light, no fresh air, and no views of an endless sea, engine work is without romance. The tedium of the job, coupled with erratic shift work, often makes the engine crew antsy and sullen. There are no days off on the ship, the crew tells me. "Everyday Monday" is the mantra. The engine crew descends into the engine room at seven am everyday, and with the exception of two twenty-minute coffee breaks and a strict one-hour lunch, remain there until dinner is served at six. In the engine room, crawling into the tightly ribbed spaces where pipes run, taking soundings of oil levels in the confined spaces around the oil tank, and lifting, cutting, or using heavy tools and machinery, the crew is mostly silent. While on breaks and during mealtimes, they regale me with stories of their families and hometowns. There is a sense in which the captivity of the engine hold elicits acute longings for home.

With reductions in crew sizes and more on-board training required for the less experienced members of the crew, the fatigue is palpable. "The problem is we don't have much time," the third mate tells me. "You have deck duty, watch-keeping, maintenance, and it never really ends." Not only has a pressured working environment contributed to stressful working conditions, but so too, as I covered in chapter 2, have security measures put in place after 9/11 increased the workload of the crew. The bridge of the ship - that window-covered platform seven floors above deck from which the ship can be commanded, has to be manned twenty four hours a day, seven days a week, and so too the gangway entrance when the ship is in port. To keep watch, officers and watch keepers have a work schedule in which they take "four on, four off" shifts, working in two staggered four-hour schedules per day, with four hour breaks in between, and overtime

on weekend. This staggered shift work means that shore leave is near a thing of the past. “We have no time,” says the officer cadet and OS Vern, “and no money to spend because we have to send 80% back home.” Going on shore in the scant four hours between their shifts means that “rest will be sacrificed,” and the crew prefers sleep. “Why should I go out?” the fitter Ocampo asks me, “when the American customs treats me like a third class citizen, and I have to spend money on cabs to go somewhere that I could be using on phone cards to call home?” On one afternoon, OS Vern asks what stereotypes of sailors I’d heard before coming on board. I grin, embarrassed. “That you are racing down the gangway to go to the strip clubs and bars,” I say. Vern laughs. “And instead, we are racing down the gangway to the seaman’s club for Internet, so we can talk to our families."

The oldest member of the crew, Papa Adem, tells me that work in the engine department did not always use to be this monotonous. “Just a few years ago you had a larger crew; at least five more people per ship. So the work was less, and the fun was more.” As container trade growth slowed after the 2008 financial crisis, the management company that runs the *Ever Cthulhu,* NSB Reederei, reduced the number of crew per ship from 27 or 28 to 21, and sought to hire cheaper, less qualified labor. This manning reduction was not unique to the company, but rather follows a general trend in the container shipping industry: since the 1980s, companies and consultants in the US, UK, Netherlands, and Japan have engaged in experiments with the reduction of crew sizes, pursuing both automation and increased ship sizes as a solution to manning costs (National Research Council 1990; OECD/ITF 2015).

This intensification of labor brought on by reductions in the workforce is evident not only in the crew but also with the officers. In recent years, the captain tells me that his main responsibilities have grown more akin to an office manager's than those of a "master of all, next to God," as the old sailor's creed goes. On most days, he sits in front of a computer relaying messages between the vessel's managing company (NSB Reederei), the crewing agency in the Philippines (Senator), and Evergreen, the charterer. He counts bills, writes emails, and cashes out cash advances to the crew. "The workload is becoming more and more," he says. "I am secretary, communications officer, clearance officer, accountant, and captain, all in one. And the paperwork I do not even want to talk about." A radio operator used to manage a good proportion of these tasks, but computerization meant that radios became largely obsolete on vessels, and those jobs have largely fallen to the captain. "The problem with computers is that everyone needs to track and know exactly where the ship is, all the time. I get messages from all the different companies wanting updates. The computer has not streamlined the process, it has only increased the number of procedures and monitoring from the companies. A lot of it is absolutely unnecessary. Sometimes you actually feel like a trucker: you do not have a say in things, you are just moving things from point A to B."

With the captain's growing responsibilities has come a corresponding reduction in the skill level of his crew, two sides of the same labor intensification coin. Since the introduction of GPS and Automated Identification Systems (AIS), schools no longer teach the navigational skills that used to be standard practice in the industry. Time-to-degrees have grown shorter so that labor can be available to the market more quickly. Maritime Transportation degrees have been standardized under an international Standard

in Training, Certification and Watchkeeping (STCW), but the standard establishes what the captain and chief mate both regard as a baseline so low that many officers, and certainly most of the crew, "may know what a black box is, but have no idea what's inside the black box, or how it works".

One afternoon, while watching the sunset from the bridge and discussing the fatigue of seafaring work, the captain tells me that in maritime school in the early 1990s, he often read studies experimenting with manning reductions in the world's fleets. He remembers that in the 1980s, one study pioneered by a Japanese shipping company had experimented with cutting personnel on a ship from 26 crewmembers to 9. "Nine! You imagine!" The captain laughs. "This was right around the time of computerization and automation," he explains, "and they wanted to see what was possible in terms of reducing the number of workers. So they experimented several times with 9 crew to see whether it was possible." Of course, the captain goes on, the study soon found that these workers were becoming very lonely. "Maybe you are eating in the mess room all by yourself, with nobody to talk to," he opines. With 9 crew members, each worker had longer hours with no substitutes to keep watch on deck and inadequate rest time – concentration levels were slipping into downward spiral, and with it, the morale of the workers.

"So do you know what they did?" The captain asks. I guess: they increased the crew sizes, they provided more recreational activities, they paid them better wages – and am wrong on all accounts. With a booming, belly-deep laugh, the captain delivers the punch line: "Their solution was: to provide the workers with silverware. Silverware! You imagine! Somehow, they were thinking that feeling fancy would conquer the problem of loneliness."

Since returning from fieldwork, I have made numerous attempts to find this study, all of which have come to no avail. One report of Japanese experiments in crew reduction found that Japanese companies successfully brought crew sizes down from 26 to 15, and eventually to 11-person crews on Japanese "Pioneer" ships in 1987, by replacing auxiliary engine and navigation controls with automated systems (National Research Council 1990). No mention was made of these shipping companies attempting to feed their workers with a literal silver spoon. The study may well turn out to be apocryphal, but whether it did or did not exist is not the whole point. What stands out is how deeply the memory of this study had stayed with the captain, so much so that he could recall it in a mixture of fascination and horror some decades later. The gap between the imagined and the real closes as the captain relates the silverware anecdote as an index for what he calls the "crass, almost inhumane" character of shipping companies.

Simultaneously comical and incredibly depressing, the image of workers sitting alone in mess rooms, surrounded by fancy cutlery but no companions conjures the image of what anthropologist Marc Augé (1995) has called the "non-place" - spaces defined in opposition to 'anthropological places' that are social, localized, bounded in time and space, and share a set of common symbols and narratives. In contrast, the "non-place" is a "dense network of means of transport which are also inhabited spaces" where no organic social life is possible, a world "where transit points and temporary abodes are proliferating…a world thus surrendered to solitary individuality, to the fleeting, the temporary and the ephemeral" (78). This idea of the non-place, often invoked in writing about infrastructures of transport, is a helpful analytical framework for debates on space and mobility, providing ways to theorize the socially inert, de-actualizing and nodal

properties of non-places such as airports (Adey 2006) or linked to broader theorizations of spaces of flow, deterritorialization, and the like. Characterized by their transitory nature and corresponding social emptiness, non-places always gesture to a reality or destination somewhere else. Much of the literature on logistics take a similar tack, suggesting that logistics, as an industry invested in smoothing out the world's surface, "pulverizes" and flattens space to facilitate (to the extent it is possible) the ceaseless circulation of money, commodities, and bodies. Yet, Augé also insists that the non-place does not necessarily exist in pure form, since the abstracting impulse of capital mobility is never fully completed (1995: 78-79). Instead, turning our attention to the seeming absence or negation of social life in non-places necessitates that we pay closer attention to "the singularities of all sorts that constitute a paradoxical counterpoint to the procedures of interrelation, acceleration, and de-localization sometimes carelessly reduced and summarized in expressions like 'homogenization of culture'" (1995, 40-41).

It is important, then, to contrast the complex habitations, material presences, dense affective relations, and hybrid subjectivities constituted in moving through non-places, with the absences, tedium, spatial homogeneity, and industrial impersonality of the ship. A container ship is a place of transit, to be sure, but unlike other spaces of transit, acts both as workplace and living quarters to sailors who spend up to seven months at a time on board. To depict structural processes of labor intensification, flexibilization, and acceleration, in the terms of abstract discourse would thus be to betray the rich textures of subjectivity so present in the lives of the *Ever Cthulhu* crew. Most know the exact number of days they have been here, and how many are left to home – but in making do with life on board, have also learned how to treat a continuous cycle of new

friends as family. There is 'Papa' Adem, the oldest crew member at 49, who doles out nuggets of wisdom and wears only pink t-shirts, a fashion choice I assume is deliberate until he tells me everything was stained after he threw a red handkerchief into his mostly white laundry. There is Rodriguez, the joker, one of the few ABs who does not hold a maritime degree, who worked his way up the food chain by once staying on a ship for a continuous 2-year stretch, who enjoys puns, card tricks, and scanning the ocean for dolphins. And there is Jayson, one of the youngest engine crew, simultaneously irreverent and kind, who has an 8-month old baby boy at home and has to sneak a cry in the bathroom when I insensitively ask how difficult it is to be away from his newborn.

Containment and homesickness are defining conditions of the seafaring occupation. Yet, this focus on the affective and embodied dimensions of seafaring work only captures one of the ways, internal to the labor process, in which logistical mobility is parasitic on seafarers' immiseration. While this section has focused on the affective internalizations and effects of seafarers' conditions of employment, the picture would be incomplete without contextualizing them within broader reconfigurations of the logistical economy. A crucial reason for the intensification of seafaring labor is the way in which international maritime law provides loopholes for shipping companies to shift to low-cost labor reserves relatively easily. This loophole, known as the "flag of convenience," in turn reinforces labor market segmentation, prompting various nations to compete to secure their labor niche. The next section of this chapter addresses these structural elements in order to provide a wider view of the structural environment in which shipping companies are able to draw from uneven hierarchies of capitalist incorporation.

III. "Flagging out": disposability, difference, and labor market segmentation

While the previous section addressed seafarers' lack of *spatial* mobility, symptomized in a combination of homesickness and labor intensification, this section suggests that their extraordinary mobility across the world - commonly associated with upwardly mobile, global cosmopolitan subject - did not effect an equalization of their wages or other terms of contract. In this way, spatial mobility works as an obfuscation of the fundamental unevenness of the labor market in two ways, first by concealing the entrapment and containment required in order to gain this mobility, and second, by revealing that barriers to *social and economic* mobility remain between European and Filipino seafarers. What accounts for these maritime labor market disparities? Why, despite Filipino seafarers' potential for economic and social mobility, has their spatial movement across oceans (albeit confined on ships) increased, while their economic mobility is restricted? We can account for an answer by looking at the structural conditions of a segmented maritime labor market. A unique conjunction of maritime open registries made possible by 'flags of convenience' law, and the globalized hyper-mobility of the maritime employment market, works to put downward pressure on the regulations of what have come to be called 'labor-supplying' countries (see also Zhao and Amante 2005; Basurko 2016; Borovnik 2011). In a mobile maritime labor market where shipping companies can rely on labor market flexibilization, and can shift to different labor pools without encountering problems with spatially fixed factories, underdeveloped labor-supplying countries seek to make their seafarers competitive by offering cheaper labor costs, defined by lower than average wages and longer terms of contract. As we shall see, however, it is not only formal regulations that produce these segmentations that prevent

Filipino's upward mobility. So too do public officials, higher education institutions, and private companies seek to reinforce the suitability of Filipinos to the seafaring career based on claims that their social, gender, national and ethnic identities make them particularly suited to the job.

At coffee break on the Friday before we arrive in Taiwan, the Filipino sailors are sitting in the mess room discussing what they will do when they get off the ship. Six crew will close their seven-month long stints on the *Ever Cthulhu* in Hong Kong, with six new rankings to take their place. There is brief talk of being reunited with their families, and the excitement of taking a vacation, but the conversation quickly turns to business. Even though these men are well-qualified for their job, the seafaring market in Philippines is competitive and contingent. Their short-term six month contracts, which can be extended to eight months should the seaman choose, do not carry guaranteed renewals. The manning agency, Senator Crewing, makes contract renewal decisions based on performance reviews and "re-skilling'. To get rehired, most seamen have to attend trainings to renew their various qualification certificates, or enroll in courses to acquire new skills, the fees for which must come out of their own pocket. OS Clement, between bites of biscuits and gulps of Nescafe, rattles off the certifications he hopes to attain in the next three months: watch keeping, quarter mastering, medical training. "Eventually," he says, "I am going to be able to do all the jobs on the ship. The more work you can take on, the more you can earn."

Through these conversations, it is clear that even when the crew is off the ship during precious vacation months, the time is not theirs alone. Given the international character of maritime labor market, there is an acute awareness amongst the Filipinos that

in order to stay competitive, they must maintain a high degree of training. “You must keep traveling to the capital to take all these tests, but it is expensive, especially when you work so hard to save for your family,” AB Monton says. Monton is a smiling, tank top-wearing, bodybuilding sailor who became a seaman on a fluke, by replacing someone who did not show up to an entrance exam for which he had not initially made the cut. He’s not someone who takes the job for granted, but even he notes the odd temporalities within which a seaman’s work permeates even his time on land. “After three months, your money runs out, so you either have to go into debt or go back on the ship.” He laughs. “On board, longing to be home. At home, cannot enjoy.” Although almost every Filipino crew on the *Ever Cthulhu* has a maritime degree which qualifies them to become an officer, sitting for the board exams requires costly prep courses and time away from home. Although working your way through the various certifications can move one to the position of an officer, many give up and remain ABs or Bosons for life, preferring to spend the little time they have on land with their children and families. The younger crew members, still flush with ambition, tell me that they are saving money for their prep courses. The youngest of the crew, Alex, tells me he sees it as an ‘investment’: “After a college degree, wiping up oil is not really the idea of what you signed up for. Maybe that’s why we all want to become officers.” There is a widespread opinion among the Filipinos that their levels of education and training are far above what is required of the job. “Sometimes,” the oiler Ryan tells me, “I cannot believe that I went to college to do this.”

For the past decades, Filipino seafarers have been in high demand – constituting almost one third of all crews worldwide – because they speak good English and come

cheap. “They know the money they pay us is not enough for the high quality work we do,” the 2nd mate tells me as he plots a navigational path on a map, “but they also know that we accept it because in the Philippines, our salaries are better than most of our countrymen.” Indeed, the Filipino state, manning agencies, and maritime schools, while keeping the wages of seafarers down, simultaneously promote a dominant imaginary of the seafaring career as one that not only affords the spatial mobility - the opportunity to “see the world for free” (Amante 2003) - but also social mobility: seafaring is promoted as a profitable and ‘wise’ choice that will help improve the living conditions of poor families in the Philippines (Mendoza 2015). Yet, there is a wide disparity between how seafaring careers are depicted by stakeholders in the maritime industry, and the reality of employment instability. While estimates suggest that the Philippines only needs 5000 graduates a year to replace retiring seafarers, accredited maritime schools in the country produce an average of 20,000 graduates annually (Jimenez 2011). The Filipinos on the ship have accordingly painted a picture of their cities and towns choked with maritime institutes and training centers, offering the promise of high salaries and the thrill of seafaring life. Men line up for days at a time at crewing booths hoping to get a job, playing the waiting game, and taking one entrance exam after the other in the hopes of getting selected. The promotion of the Philippines as the “Manning Capital of the World” draws on stories of upwardly mobile, prosperous seafarers and the critical role of the Philippines in supplying a labor force that is naturally inclined to seafaring (Fajardo 2011). Yet, these imaginaries hardly bear out, given the thousands of Filipino maritime school graduates who wait for months, and even years, without finding jobs onboard ships. The ones who made it onto the market count themselves lucky.

One may locate a tension here between the luck most Filipino seamen feel in having their job, and the misery they experience through their working conditions. Why do seamen return to their jobs year after year – the longest-working member of the crew had been a seafarer for thirty-five years – when they often find the conditions unbearable? In a country whose gross national income per capita was USD $9390 in 2016, a seaman's salary is well above average. Although the minimum wage for an ordinary seaman may start at USD $614 a month, the wage scale ranges depending on the manning agency and the prestige of the shipping liner. The starting salary for the ordinary seamen on the *Ever Cthulhu,* for example, was $1100, with officers paid up to $3300. Seafarers commit to a maritime training academy and years on the job in the hope that they will be able to support their entire family and emerge into the ranks of the middle class.

The harried efforts of the Filipinos to distinguish themselves in the global labor supply are reflective of a key structure of the maritime labor economy. Because the maritime labor market is highly competitive, states seek to secure their labor niche by vigorously promoting low costs. Because the Filipino economy depends on foreign capital brought into the state through shipping firms, the state is dis-incentivized from securing the labor rights of their workers through policy work. Instead, the state claims that "the hands of the government are tied," mobilizing instead the neoliberal narrative that seafarers have to seek their own upward mobility, and have "no one to rely on but themselves" (Jimenez 2011, 255).

Indeed, these claims are not unfounded: even though Filipino seafarers have since the 1980s been the most popular crewing choice - constituting 28.1 percent of the total

seafaring population (Amante 2003) - today Filipino labor has come under threat: NSB has established maritime schools in Sri Lanka and Shanghai where labor comes even cheaper, following a pattern that other companies have established. Other states, vying to insert their seafarers into the shipping economy, drive down wages and increase the length of contract to be competitive on the international labor market. For example, under negotiations between the Island States' governments, Kiribati and Tuvalu seafarers accept wages under the average of those of Filipinos, and above-average working times of ship, spending up to twelve months on container ships, in contrast to Filipinos' six (Borovnik 2011). Like all other industries, shipping moves on roller skates around the world, seeking lower and lower capital outlays as they experiment with bringing the operating costs of ships down in order to achieve economies of scale. Quite different from other attempted spatial fixes for crises of profitability, however, the geographical relocation of maritime labor pools does not require heavy fixed capital outlays from investment in costly and immobile infrastructure and machinery. Schools and training centers can be set up (and moved) at costs relatively minuscule to that of constructing a factory or manufacturing plant, with large payoffs in the availability of cheap maritime labor they churn out. Acutely aware of that maritime training centers are increasingly being set up in places like China, Sri Lanka and India, the Philippines Overseas Employment Agency (henceforth POEA), which determines the minimum standard contract terms, has delayed implementing the International Labor Organizations' wage recommendations for three years.

Despite the fact that the 2006 Maritime Labor Convention was entered into force in 2013, the POEA continued to use in their 2015 standard contract the 2012 ILO rate of

$486 per seaman per month, which remains $128 below the ILO's 2016 rate.[57] It is in the Philippines government's interest to depress seaman's wages, since the shifting of contracts to labor reserves in other developing countries would result in the loss of lucrative remittances, and a setback to the state's development strategy. Since the state-sponsored export of Filipino seafarers began in 1974, seafarers have become an important feature of Philippines' participation in the global economy. The POEA, which oversees all seafaring manning agencies in the state, mandates that Filipinos employed or working overseas send 80% of their earned income back to the Philippines. These remittances reached over UD$20 billion in 2011 alone, constituting between 8 and 10% of Philippines' gross domestic product (Encinas 2013, 98). In fact, according to the Philippine Labor and Employment Plan (DOLE 2013), overseas remittances provide a crucial cushion to the national economy during times of economic crisis.

In this sense, the Philippine state *copes* with the challenges of neoliberal globalization and economic restructuring by increasing the social costs of seafaring work. Unlike traditional labor markets in the West, working conditions within this floating labor regime are not circumscribed by the operation of geographically rooted norms, trade union institutions and localized practices that normally emerge under geographically bounded social conditions, and which serve to form labor communities and increase workers' living standards (Herod 2003; Storper and Walker 1989). Instead, for ship owners, growing the pool of available low-wage, contingent workers who "should be grateful for what the industry gives them" - the chief mate has often intoned - proves the most feasible and cost-effective way to solve "the labor problem." As a result,

[57] NSB-GIS Wages Scale, Internal document, *Ever Cthulhu* ship captains' archive; ILO 2016

the hypermobility of capital, and the resulting deterritorialization of labor markets, means that states must vociferously defend their niche by driving down working conditions. This in turn prevents Filipino seamen from gaining the very upward mobility that attracts them to the job, effectively "marketing the dreams" of many Filipinos (Guevarra 2010).

Flags of Convenience

Crucial to the deterritorialization of the maritime labor market is the institution of "open registries" or "flags of convenience." Under this system, a ship can fly the flag of a state that has nothing to do with the ship owner, the nationality of the crew, or the ports at which they stop. The modern practice of flagging ships in foreign countries began in the 1920s, as ship owners became frustrated with rising labor costs and taxes. Panama was the first country to offer this system of open registration, but was soon followed by other nations. On sea, no matter whether across the Pacific or at port, ships are governed under the nation whose flag they fly – making vessels, as Rose George (2013) has put it, "floating chunk[s] of the nation state" (70). While US firms had already begun to experiment with open registries and flags of convenience in Panama since the 1920s, their use only rocketed in the 1970s. Ship-owners had largely flagged their vessels in their home country prior to this moment, and as a result, had to hire employees from their own nation and adhere to domestically negotiated labor standards and wages. Today, flags of convenience facilitate open registries that allow companies based in one nation to flag their ships 'out' to countries that do not require the citizenship of ship-owners, levy minimal to no taxes, and allow companies to hire non-nationals, solving the 'problem' of having to adhere to the costly standards of hard-fought democratic and worker rights in

their own nations (DeSombre 2006, 4). An FOC ship registered in Liberia, for example, may be built in South Korea, owned by an Israeli, crewed by a mixture of Asians and Europeans, and chartered to a Taiwanese company. Today, 68 percent of ships fly a flag that does not belong to the country of their owner's origin or residence – and the requirements of establishing a "genuine link" between flag nation and shipping company (a requirement stipulated by the United Nations Convention on the Law of the Sea) are not more than sustaining an office and a mailbox in a distant land such as Liberia or Panama- often underdeveloped countries who pursue deregulation because this enables them to derive crucial sources of revenue through foreign investment. In this way, the ship constitutes a sovereign space of the state whose flag it flies. It maintains the boundary-making aspects of sovereignty while dispensing with governance as an aspect of sovereignty.

Almost all shipping companies have resolutely shifted to an open registry model. Flags of convenience incentivize companies to lower their operating costs, and given that labor standards are among the most difficult to create and enforce nationally, companies and flagged states are both reluctant to adopt or enforce costly labor standards. As Elizabeth DeSombre (2006) points out, "unlike equipment standards that can be checked objectively… - and that may need to be checked only once - labor standards are at issue for every ship traveling the oceans and may be upheld or ignored at different points in time" (137). Flags of convenience thus "provide an advantageous blanket of anonymity" for ship owners (Barton 1999 in Cowen 2014, 46). The stakes of this form of re-regulation are significant for labor: enabling owners to subvert the national gains won by seaman's unions both nationally and internationally, open registries opened the labor

market to lower cost seafaring labor from countries in the South. Crucially, as Stephen McKay (2007a) points out, these registries were created in heated intention with European and Japanese seafarer labor unions, who sought to retain higher-paid positions at the officer and engineer levels, while providing openings for foreign crew to fill lower positions of 'ratings' in the deck and engine room. As such, "ship owners opened up the labor market, but only at the bottom" (McKay 2007a, 67). One sees the effects of this quite acutely on the *Ever Cthulhu*. In the management practices of NSB-Reederei, the shipping company that owns and manages the operations of the ship, Filipino workers are contracted by an external source: The Philippine-based Senator Crewing Company. Under Senators' contracts, Filipino seamen - both officers and ratings - are contracted to work on ships for a period of "6 plus or minus one" months, depending on the need for crew changes. Their vacation time is unpaid, and since they are not employees of the German-flagged NSB-Reederei, they have no assurance that they will be rehired on the next journey. In contrast, the European officers are direct employees of NSB. In their terms of contract, European seafarers have only 3 to 4 month terms of contract, with three months of paid vacation in between contracts, and full health and pension benefits.

The effect of the open registry system on wage and contract differentials create what has been termed a segmented labor market, where employment and working conditions are determined not by universal market mechanisms, but by deliberate, employer-led arrangements of labor in hierarchal segments (Gittleman and Howell 1995). As Reich et al. (1973) argue, employers "actively and consciously fostered labor market segmentation in order to 'divide and conquer' the labor force" (361). By affording shipping companies with a registry structure that creates secure employment for

European superiors at sea, while reiterating and formalizing the contingency of Filipino rankings, the open registry system actively contributes to a rigid segmentation of the maritime labor market. Since reserve armies of labor are always waiting in the wings to take the next available job, flags of convenience drive the immiseration of labor by holding the threat of dispensability over Filipino seafarers' heads. This denies room for social and economic mobility by raising the barriers Filipino seafarers have to surmount when they attempt to increase their wages or move from low-paying positions to higher rankings.

The flag of convenience system's effects on the immiseration and disposability of labor has been especially palpable on the *Ever Cthulhu* in the last few weeks. Within the year, the captain and all the European officers on this ship will be out of a job. The company that manages the *Ever Cthulhu*, German-based shippers NSB Reederei, is to exit the German flag by 2017 (Ship Management International, 2014). NSB will move their remaining 38 German flagged ships to a flag of convenience, and with that, will gradually lay off their 486 European employees at sea – largely German and European officers, ship mechanics, and engineers. Commenting on the circumstances that led to their flagging out, NSB CFO Lutz Weber commented: "We regret that…we weren't successful in bringing the framework of support for the German flag to another level, which would ensure a European employee at sea the long-term ability to compete internationally…Unfortunately, Germany, as a maritime location, offers European and German sailors no prospects" (ibid). The officers seem to feel this lack of prospects in their bones; there is a melancholic tenor to the officers' presence on the ship, each acutely aware of the imminent loss of their job. "Of course I'm angry," admits the ship's

mechanic, a gruff middle-aged ponytailed German who plays in a death metal band, and whose only other words to me in my four weeks on the ship have been "no smoke, no fight," as he offered me a cigarette. "You work your whole life for a company, and they abandon you." He tells me he has a friend who will hire him to pull windmill blades on barges off the north German coast. "The pay is shit. But I have nothing else possible." The captain and I have also spent evenings in his cabin's spacious living room discussing his possible futures. "I have to look for a job on land, but my whole life has been at sea," he sighs. "And my wife — well. She is used to me not being around. What do I do if I am not a sailor? This I do not know." For the Germans, the ready availability of "surplus" populations of seafarers around the world proves a constant threat to their job security. This pattern of layoffs is becoming widespread in the shipping industry: as cutting costs has become more and more imperative in view of the industry's overcapacity and atrophying profits, workers with secure contracts and the capacity to collectively organize are aware that they may lose their jobs soon.

In this way, the looming horizon of job loss disciplines both Filipinos and Germans through the threat of their dispensability. Halasan, the ship's oldest AB, who likes to speak from the perspective of how "the reality" works, puts it this way: "Of course the companies like to have small poor countries to work for them. You work for me, it's good for me. You don't want to work for me, you want more money, ok, then 'bye bye! You can go'. Poorer countries need the work. We are all competing for the job. You want more pay, we will just go to another country. Why do you think I kept my job for 15 years? Because I speak small, patience big. For us, the graph keeps going up and down and up and down. It's never that conditions get better and stay better. No. It goes

up and down. and you choose where you want to be." As Mazen Labban points out, then, layoffs "do not only constitute a method of cutting costs but also a regulatory-disciplinary technology that operates at the point where the individual worker and the class of workers meet: a technology that disciplines and manipulates the capacities of the collective worker as a productive force and regularizes the life of the collective worker as a living mass." As such, the hyper mobility of the logistics labor regime functions not only to expand the capacities for logistical distribution and to reproduce the value relation, but also to extend "the sovereignty of capital" over life itself (Labban 2014, 491).

Although the German officers maintain a certain sense of resignation about the broad structural shifts in the logistics market that have created the conditions of their precarity, this resignation frequently moves from abstract frustrations with the global capitalist system to individualized judgments about the Filipinos who are suspected to replace them. Having worked between 12 and 31 years for a company that will soon abandon them, the officers maintain a "pride" in their work, and frequently cite cultural differences as the reason for better European work performance and frustrated managerial expectations. From their perspective, a majority of Filipinos do not display initiative, and complete their work only just-so, never extending themselves beyond what they are asked to do. "You have to have some basic satisfaction from your job," the captain thinks, "but the Filipinos, they just treat it as pure work." The Filipinos will unapologetically agree: "It's just a job," they have often said. "Just do what the officers tell you. Mind your own business." One side is resigned to the fact that they will be replaced by the others who provide a cheaper alternative, but maintain that they are trained better and care more. The other underscores the fact that the industry relies on the uneven distribution of waged

work to pay them less, keep them on ships longer, withhold long-term contracts — and that their willingness to do this alone makes them valuable. In offering his own reasoning for the wage differentials, the oiler Jayson tells me: "I know that NSB pays different rates to Filipinos and Germans. I've heard that they should be earning more than us because their cost of living is high. But I don't know. We just assume that that's the way it is for Filipinos to earn less. If you want to have more competitive workers, you must have more competitive salaries, we know this. But they are not really paying us enough. The reason why we are here is simple: We are cheaper than other people who would do the same job, that's why the company wants us."

These rationalizations and explanations of social and cultural difference with which both Europeans and Filipinos justify their antipathy towards each other bring attention to the embodied forms of spatial, social, and political difference that become etched into the framework of daily seafaring life as a result of the globalized supply chain. In comparing the vastly different contractual terms of dual wage regimes such as the ship, I have been struck by how much the globalization of the maritime labor supply is really a process of contestation between the hard-won rights earned by organized labor collectives, and the processes of deregulation and globalization that are integral to the story of the logistics revolution. In fact, the flag of convenience debates have consequences not only for the shipping industry, but also have "wider ramifications in terms of the globalizing of other sectors" (Barton 1999, 149). As Jonathan Barton argues, geographies of shipping regulation have "provided a model of interstate failure to regulate flexible, globalizing, geo-economic forces" (ibid), pointing toward the broader

attacks on the working class that the transnational reorganization of geo-economic practice help to facilitate.

Importantly, as we shall shortly see, these segmentations do not derive from "purely economic" relations brought about through flags of convenience, but also through political and social forms of regulation. Whereas Edna Bonacich (1979) has argued that split labor markets are simply derivative of pre-existing differentials in the price of labor power between historically metropolitan and colonial regions, the resentments and mobilizations of difference between European and Filipino seafarers reveals more complex arrangements that involve social and political forms of regulation (Ahuja 2006). Bonacich posits that racial and cultural differences do not "in themselves" prompt the development of ethnic antagonism. Instead, she stresses "the role of a certain kind of economic competition in the development of ethnic antagonism" (1972, 548), arguing that ethnic conflict is secondary to, and produced by fundamentally class conflicts along the divisions of "business or employers, higher paid labor, and cheaper labor" (ibid). The next section rejects this reduction of race and ethnicity to epiphenomena of class. Ethnic, national, gender and other social differences play a crucial role in the enforcement of segmentations and hierarchies of labor in the maritime labor market, and on board the ship. Tracing the construction and reinforcement of ethnically-segmented labor niches reveals that discursive and spatial mobilizations of cultural difference are key constitutive elements of maritime labor practices, such that uneven exploitation is reinforced on the basis of not only low-costs, but also the strategic mobilization of essential characteristics of national belonging.

IV. Constructing Difference through Self and Superexploitation

This fourth and final section of the chapter lays out the informal yet crucial ways in which mobilizations of cultural and social difference work as justifications - both externally imposed and internalized - for the exploitation of seafarers. To return to the theoretical objective of this chapter, I sought to not merely reconstruct the forms of labor containment and immobility that define capital's extraordinary mobility, but to show how complex arrangements of state and capital power work to reproduce aspects of identity as essential to the hierarchization of the seafaring wage and contract. The emergence and reproduction of the Filipino labor niche, defined in relation and sometimes in opposition to European labor, reveal how workplace social relations and global labor markets are shaped by, and in turn actively shape, gendered and racialized occupational identities. Patterns of labor market segmentation are defined not only through employer-led, demand-side pressures for differentials in wages and terms of contract. On the supply-side, labor-supplying countries also manufacture and reproduce social ascriptions of suitability to the job based on seafarers' citizenship, physiognomy, and even affective comportment (Chin 2008). Both on board the ship and on the labor market more generally, constructions of the Filipino sailor as "hyper masculine and macho, heterosexual and heteronormative, responsible and hardworking" (Fajardo 2011, 79) lead Filipino seafarers to withstand and rationalize the difficulty of their working conditions, while simultaneously prompting them to defend and reproduce their labor niche on the global maritime market.

In 1988, Philippine President Corazon Aquino famously called Filipino domestic migrant workers in Hong Kong "*bagong bayani,*" or "new heroes" (Encinas-Franco

2013). The term would stick, quickly become the dominant narrative of Philippines labor exportation, used to promote images of the Filipino migrant worker or overseas worker as a self-sacrificial and lonely, yet obedient and hardworking individual. As numerous scholars have pointed out, this discursive mobilization has become ubiquitous in government documents, crewing brochures, public speeches, and more (Parreñas 2001; Bach and Solomon 2008; Gueverra 2010). Because seafarers and other overseas Filipino labor have become essential to the Filipino economy, the Filipino state is compelled to promote a culture of labor export to domestic audiences in order to make difficult jobs seem attractive and lucrative. At the same time, as Ruggunan (2008) has argued, shipping capital interests prefer to hire a workforce from nationalities that exhibit characteristics such as "obedience, passivity, and ability to integrate" (278). The *bagong bayani* narrative thus also functions to justify a niche for Filipino labor as particularly qualified for the job of seafaring.

The narrative of Filipinos as good, dependable, and English-speaking workers is intimately related to histories of the American colonial presence in the Philippines. As Steven McKay's (2007a) research has shown, in 1899, the US colonial government helped to set up the Philippine Nautical School, which the Philippine government retained as its foremost maritime academy when it gained independence in 1946. There, the instructional language was English, the curricula and methods of maritime training American, and the process of certification was explicitly modeled after the US Merchant Marine (McKay 2007a, 67). The legacy of American imperial presence in the Philippines thus provided the conditions for the Philippines government to distinguish its labor pool in the 1970s: Ship owners faced with the need to cut cost while hiring reliable labor

quickly came to prefer Filipinos for their English language skills and 'Western' standards of certification. The Philippines Overseas Employment Agency (POEA) and National Seaman's' Board accordingly tout the strengths of their seamen in brochures and pamphlets on these terms. Using POEA pamphlets as cultural artifacts for understanding these mobilizations of national difference, McKay finds that a POEA pamphlet from the 1980s variously advertises Filipino seamen as "dependable shipmates," inherently "adaptable and hard-working," and willing to "keep within set rules and regulations" (McKay 2007a, 71).

Similarly, I found that the manning agency that employs and contracts NSB-Reederei's Filipino crew, Senator Crewing, adopts these strategies in its marketing materials. In one of its promotional brochures, Senator Crewing promotes Filipino labor by claiming that Filipinos are "natural seafarers" who are "completely disciplined, hard-working, flexible and reliable", and who "do not compromise themselves on performance or attitude even under challenging conditions at sea" (Senator Crewing 2014). In drawing both from imperial legacies of US colonial presence, and essentializing conceptions of Asian subservience and discipline to valorize the low-cost, contingently contracted labor of Filipino seamen, these narratives show that practices of labor segmentation enlist performances of racial and ethnic difference in recruiting and motivating workers. As Anna Tsing points out, this use of cultural particularism's to market certain labor segments illustrates a key feature of supply chain capitalism: while supply chains "are not necessarily more diverse than other capitalist forms," supply chains "link up dissimilar firms" in ways that prompts supply chain capitalists to "worry about diversity" (2009, 152). This self-consciousness about diversity - this mode in which

the acute awareness that an entire country's labor supply can be passed over at any time - conditions the recruitment of labor into supply chain jobs, where appeals to specific 'cultural' characteristics are placed at the center of the supply chain's labor recruiting and disciplining practices.

Divergences in cultural practices are reproduced not only discursively but also through the reproduction of difference within the spatial organization of the ship. The spatial configuration of living and recreational areas on the ship - with all their attached markers of cultural difference - reify these divides between the ship's European and Filipino crew. In a bounded space where the ship becomes both home and workplace, the embodied politics of living and working on a ship connect the spatial divisions of work and non-work life to the social and cultural differentiations of working bodies. Since the early-2000s, ships have increasingly expanded in size in order to capture the economies of scale that come with larger container loads. The expansion of ship carrying capacities, however, has come with shrinking accommodations and recreational space. While work spaces - the cargo holds, the ballast tanks, the container stacks and the engine department - are cavernous, canyon-like, and inspire awe at the technological sublime, living spaces on the ship have shrunk.

A walk through the ship's accommodations can feel strangely claustrophobic. The hallways barely fit two abreast. The elevator is pint-sized; the captain and chief mate - both six feet tall and hefty - can stand in it and occupy its entire capacity. While the captain and officers all have spacious rooms at the ends of hallways, each crew member has a cabin that holds not much more than a twin size bed, a small table, and a length of narrow built-in seating. A hierarchy of the spatial arrangements in lodging is evident,

reinforcing a hierarchy of labor. The most significant example of these separations is the mess rooms where the crew has three meals and two coffee breaks a day. It would not be an exaggeration to say that the officer and crew mess rooms delineate two different worlds. The crew mess room is a door-less space with green industrial flooring, where six rectangular tables are tethered to the ground with fat metal legs, thick plastic tablecloths wrapped and riveted around their edges. The chairs - four to a table - are metal frames with synthetic cushions. On the other side of the partition, a countertop holds "Filipino style" meals: pinkish stews of processed hot dog slices and tomatoes, adobo chicken, and fried fish sitting in oil on metal trays. The crew serves themselves. Grab a plate, scoop some rice, and file down the line of lukewarm, flaccid food. Seating positions on the six tables are assigned. On most days, the seamen eat quickly, clear their plates, and then go back to work, to their cabins for a nap, or to the computer room to send an email to their families.

Walk leftwards down the hallway, however, and one pulls open a heavy steel door to the officers' mess room. The wooden-lain floor holds three round tables, each draped in crisp white tablecloths. The chairs are wooden with a soft cotton fabric. A u-shaped counter sits behind a wood-latticed partition, serving salads and appetizers. These are the only components of the meal that you serve yourself. Everything else is presented in three courses "Western style": a soup, a main course, typically a slab of meat with a side of the kind of vegetable that will keep for six weeks at sea, and a dessert. Upon entering the room, each officer is greeted by the steward Joey, who emerges from the kitchen, unfolds a white napkin into their lap, and asks for their choice of protein: "meat today, or fish? Potatoes or cabbage on the side? Beef tartar or eggs?" Service lasts throughout the

meal, and at some point, the cook will come to check if the food was satisfactory. Plates are whisked to and from tables with care. These reproductions of cultural sophistication through the meal service are taught in Filipino maritime schools. The steward, Joey, tells me that he had to attend a culinary course in order to get the job. In it, he tells me, they learned how to speak clearly and politely, how to conduct 'European style' meal service, how to carry a plate, arrange cutlery, and all the other trappings of European etiquette. "Its high class in here, do whatever the hell you want in there," Joey says, jerking his head in the direction of the crew mess room.

While partitioned according to those official work categories of officers and rankings, these separate dining rooms map effectively onto a division between European and Filipino labor. Of the six officers on the ship, three are Filipino, but none ever stepped foot into the "Western style" officers' space in the six weeks I was on the ship. "Eh," Artemio the second mate grunted when I asked why as we sat in the crew recreation room watching re-runs of a Filipino variety show. "We eat with our own people, they eat with theirs." Facilitated by this spatial division, Filipinos and Europeans have often spoken freely about their perceived differences in the absence of each other. "The Filipinos and us, it's really two different worlds," the captain tells me one night between bites of red cabbage. "It is like they speak a different language. If something is broken, they will not tell me it needs to be fixed. They will just leave it. It is a constant task trying to think when and how to teach them." The chief mate, a rather arrogant, pot-bellied younger German who once served in the Navy, has a fondness of complaining about the Filipinos in terms of their perceived lack of intelligence. Speaking often of their lack of initiative when they do not report damage to the ship or items needing

maintenance in their cabins, his response is frequently derisive. “They are simply stupid,” he says, leaning back and folding his hands onto his stomach. The captain, a much more thoughtful man, will counter: “I will not say this. Stupid is not what I will call it. But they are not educated in the same way. They are not taught to think. I don’t know whether it is a Asian thing, this kind of submissiveness, but it makes it really hard to do my job.”

After dinner, I head to the crew recreation room; today is the second mate’s birthday. Artemio is arguably the ratings’ favorite officer: a well-built man with curly hair, soft eyes, and an indefatigable smile who will, rather than dole out work orders and walk away, perform the most menial of jobs alongside his men. The party thrown for him reflects the crew’s appreciation: Chef has fried some pig skins (a crowd favorite), pickled some fish, and served platters of pineapple and ham, deviled eggs, and squid in a tomato sauce. The alcohol - 12 USD for a case of 36 San Miguel cans, 10 USD for a 2 gallon box of wine - flows freely in plastic cups. As is often tradition on most ships, the karaoke machine is on. I walk into the recreation room to AB Clement performing - complete with hand actions and faux dance moves - a rendition of a Backstreet Boys song, to which some crew are raucously providing backup vocals. Parties like this are par for the course on most weekends over the Pacific Ocean, where, unburdened from their port duties and tighter working schedules, the crew is in a decidedly more relaxed frame of mind. We have been singing for about an hour when the captain walks in, and immediately, the tenor of the room noticeably shifts. “We go from party hard to party gentle,” Rod chuckles after he has left. In this way, while home-work separations in conventional market economies permit clear delineations between working time and recreational time, the mere entrance of a European officer on the scene changes the fabric

of social interaction amongst the Filipinos, extending management powers over workers' lives that fuse work hierarchies with social and cultural ones.

The crew respects the captain: they tell me that he is a good man, that he seems to trust them, and that he is cooperative and genial. Yet, there remain fundamental divides between officers and crew, exacerbated by the ships' spatial divisions between living and working, dining and recreation, Filipino and European spaces. Once, while cleaning wrenches and tools in the machine shop with Alex, the 20-year old wiper who is on the first ship of his career, he mentions to me that after four months on the ship, he still has not approached the captain to set up an email address. I am flabbergasted at this news: satellite email is the only contact that the sailors have with their families while on the ocean, which means that Alex has not been able to talk to his family or his fiancé except for a few fleeting hours on his phone in port. "Why haven't you asked?" I said.

Alex, shy, almost embarrassed, admits: "Up there on the bridge, it is so far away from this engine room. I feel very weird going to the captain's office to ask." Alex tells me that the engine crew almost never goes up to the wheelhouse to look at the view. I tell him of its beauties: the 360 degree wraparound view of the vast ocean; the way the sunset flares green for a second on the horizon because of the curvature of the earth; the twinkling lights of the harbor as we near land. "That's not for me," says Alex. "I am down here, just working." As Doreen Massey argues, the spatial division of labor - that is, "the spatial organization of the relations of production (in the widest sense of that term)" - affects not only where certain jobs happen, but also the social relations that construct economic space, including new sets of relations between activities in different places, new spatial forms of social organization, new dimensions of inequality, and new

relations of dominance and dependence (Massey 1995, 3). More than a re-organization of space, spatial divisions create and actively produce new hierarchical relations of difference that are mapped onto the ship both spatially and socially.

The specific boundedness of ship space creates both intensified forms of intimacy *and* distancing for seafarers. While varied in the extent and intensity of their cultural conceptions of difference, these social and spatial divisions point towards the messy, overlapping, problematic ways in which the seamen mobilize "cultural divides" and notions of nationality-based inferiority as the backdrop against which they can valorize their own labor as more productive, more superior, and more effective.

In fact, while sampling the ship's mandatory "cultural competency" computer module, I learned that these perceptions of difference are actively inscribed as objective truths into maritime 'job training'. Slides on the computer presented images of a Caucasian male instructor ostensibly providing these lessons on "safety versus culture." Western cultures, it declared, "have often been accused of believing too much in their own solutions," while "many Asian cultures are described as non-assertive." Beyond the obvious ways in which these trainings represent stereotypical notions of culture as sedimented fact, the module also seemed to assume - even encourage - a model of cultural interaction that presupposes a predisposition toward antagonism and lack of understanding. Figure 20 shows one slide in which I was asked to identify my perceptions culture and its effects:

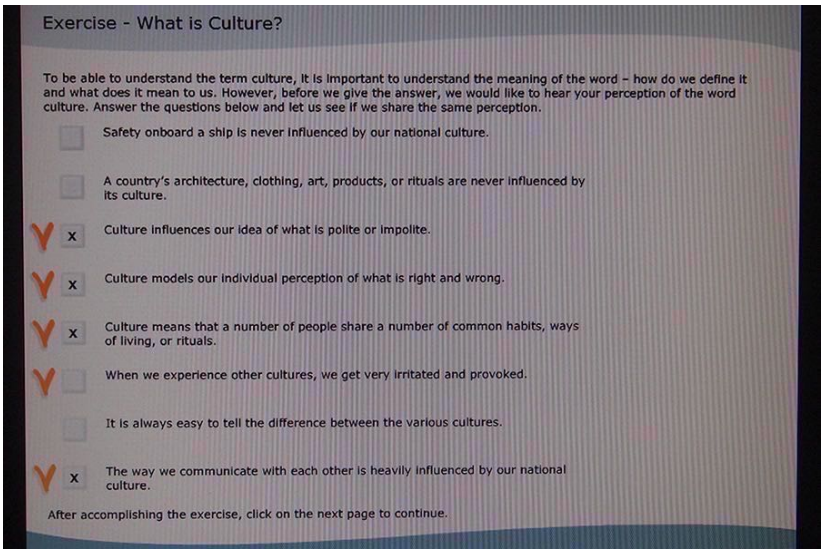

Figure 20: A screenshot of a diversity learning module in partnership with Seagull AS and Green Jakobsen A/S.

I did not check a box that said "When we experience other cultures, we get very irritated and provoked," assuming that this ascription of intolerability to experiences of difference would not be encouraged. To my amusement, I found that the training module did indeed mark the option as a correct answer, suggesting that the pedagogical thrust of the primary cultural competency training on the ship was to assume a field of fractious and conflictual contact between Westerners and Asians. As Waldinger and Lichter have shown, in recruiting labor for "secondary" jobs such as crew ratings, employers tend to prefer groups that feel they are best suited to subordination, then posthumously ascribe this character of subordination to members of the group itself (2003). Such an approach to 'diversity' claims a respect for cultural difference, even as it presupposes diversity as the necessary condition for exploitation in the first place. In this way, supply chains depend on those very factors banished from the economic precisely because this is what makes them profitable (Tsing 2009).

Abstraction, Fragmentation, and Superexploitation

While on the *Ever Cthulhu*, it has become clear that workers often justify the importance and relevance of their specific labor by recourse to more than their abstract capacity to work. As Andrew Herod (1997) shows, workers themselves construct images of place in order to secure their labor market position, and that they deny these images to other places. The social fields that structure the imaginations of seamen are a complex interweaving of race, ethnicity, nationality, gender, and so forth. These forms of identity map onto both the Filipinos' and Europeans' self-valorization of their labor. On the ship, this super exploitation plays out in ways that often align the seaman's markers of identity with their ability to perform the job well. Take the 3rd mate's explanation of why Filipino seamen are a popular choice in the industry:

> "I've heard that most companies are hiring Filipino ratings because they work more efficiently. It's usually European officers, Filipino crew, but I heard that one vessel experimented with only Europeans, no Filipinos. The German captain was tasked to observe and compare. And by the end, the captain wrote that it's better to have all Filipino ratings, because when you tell them to do things, they will get things done. For Europeans, if coffee break is half an hour, they will leave at 0950 and come back to work at 1040. We Filipinos, no. We stop working at 1000 and are back at work by 1030."

When I ask why this "hardworking ability" seems to be the case, the 3rd mate speculates: "Because most Filipino seamen come from middle or lower-middle class. We're used to the mentality that we are working hard for our job." Once, at work scrubbing rust off the railings of the ship with an oxalic solution, Myke recalls a chief mate who would check in on the crew's work almost three times a day. "This made me think they do not trust us," he said, speaking in the third person plural as if this chief mate was representative of

officers in general. “They must learn to understand our people, our nationality. Filipinos are hardworking. If they look, even if they don’t look, we still finish our job.”

This recourse to Filipino discipline and hardiness is a frequent trope in the seamen’s’ reflections on their job: ‘Big boy’ Von, who comes from two generations of seafarers, tells me that before POEA limits were instituted on the duration of stay on a ship, “the competition for seamen was: ‘how long can you stay on board?’ My father once stayed for almost two years on a ship without ever getting off. Now there’s a law, but before, people would stay for as long as four years.” Despite having one of the gentlest demeanors on the ship, Von retains a certain attraction toward masculinist - and masochist - narratives of ‘suffering’ for the work. “For us it is most important to find a strong woman for a wife,” he tells me one day as we swab the deck on a quiet day at sea, “because we are like soldiers - it’s not guaranteed that we will ever come back.” There is a certain sense of pride invested in this idea of the seaman as a soldier, even as Von admits he has never felt more lonely or sad than when he is on board the ship. While they have never made the direct connection, I have wondered how much the Filipino seamen have taken on the narratives provided for them by the Philippine government. The state’s promotion of the *bagong bayani* or new hero concept has never been explicitly acknowledged on the ship, but conceptions of heroism are never far from view.

Unsurprisingly, this narrative of the seaman as a hero is deeply gendered. It often became evident that my position on the ship as a woman working alongside these men elicited various anxieties about the masculine character of the job. In the middle of five hours of mopping a filthy deck one day (more exhausting than one might think!), Rodriguez surveys the work I’ve done and says, “This job is not for a woman. Whole day

cleaning like this? It's exhausting. I think only men can stand how difficult this job is. Being willing to be away from family, the long hours, the strength…" He trails off. Likewise, joining the crew late one day when they have been assigned to wipe down the hallway walls, Clement is reluctant to hand over a rag. "I feel bad making a lady clean," he says hesitantly. "It makes my heart pain, really. You shouldn't be doing this." Highly amused at these sentiments, I have often responded firmly, if gently: "Uh, you are mopping the floor, that is almost the traditional definition of a woman's job!" or, "what do you mean? Ladies clean all the time." The seamen have continued to insist on how ill-suited women are for their work. I have continued to assure them that I am capable of working the physical demands of the job just as much as they are.

Noticeably, sexist remarks and jokes (most often oblique to the task at hand) are made the most frequently when I perform more physically demanding tasks alongside the crew. One afternoon, while stocking a mountain of ten-pound twist locks into the storage room, lifting one in each hand at a time, I am told a rape joke by my closest friend on the ship, Rodriguez, who laughs heartily in response to my horrified expression. I have likewise been subject to various forms of harassment, blatant objectification, and been reprimanded for my 'inability' to find a husband. In these performative enunciations of gendered masculinities I see the presence of long legacies of misogynistic, hyper-masculinized work, but I also see how "workers establish their economic performance through performances of the very factors that establish their superexploitation: gender, race, ethnicity, and so forth… A day laborer must perform brawn and availability; a prostitute must perform sexual charm." (Tsing 2009, 159) In this way, workers become complicit with their own exploitation. On the one hand, they express hopes and desires

that exceed the disciplinary apparatus of the firms they serve. On the other, they take features of their identity to be essential attributes of what makes them 'good' workers.

These mobilization of categories of superiority and inferiority on cultural terms, combined with internalized conceptions of masculinity, bravery, sacrifice, and discipline inherent to their 'nature' thus suggest that while class antagonisms may emerge in the context of economic tensions produced by the transnationalism of the global labor market, these tensions both produce and are in turn shaped by non-economic conceptions of identity, articulated through geopolitical and racial difference. In calibrating differentially placed and positioned bodies to the task of distribution, shipping companies both rely on diversity for low wages while simultaneously rendering as reprehensible the very cultural misunderstandings that emerge from their recruitment of diverse labor. Global supply chains thus "tap and vitalize performances of so-called noneconomic features of identity" (Tsing 2009, 157), but they also endeavor to manage and control the tensions that rise from a fragmented labor regime by managing the negative affects that arise from such experiences of difference.

In attempting to abstract and homogenize space to optimize flows of capital then, the growing logistics economy must find ways to both recruit and resolve the diversity it invites into its structure. While Marx regarded abstract labor in the economic sphere as the fundamental unit of both absolute poverty and general possibility, Lisa Lowe argues instead that "capital has maximized its profits not by rendering labor 'abstract' but precisely through the social production of 'difference,' marked by race, nation, geographical origin, and gender" (Lowe 1996, 27-28). Classical Marxist critiques do not regard modalities of differentiation to be crucial to the development of capitalism.

Recognizing this dynamic is crucial since, if there is to be any form of collective organizing or solidarity building within the spatially diffuse, fragmenting architecture of global logistics, it has to respond to the challenges that will inevitably arise from organizing within these diverse structures. Positing a horizon of universal proletarianization does not, as such, adequately negotiate the tensions that arise from the supply chains' diversity.

Conclusion

This chapter sought to illustrate how the ship and the seafarer are crucial sites of analysis for understanding a global economy structured through logistical circulations. In zooming in on the ship and the diversities of labor on board, we see complex arrangements that juxtapose and justify differences between Europeans and Filipinos on both economic, and racialized and cultural terms. These arrangements are often conflictual in a way that not only produces animosities between ethnic segmentations, but also become rationalizations of rigid hierarchical structures that play on Filipinos' perceived traits of subservience and discipline. Importantly, these identity constructions help Filipino seamen to understand and cope with life on board, but it also reinforces their disinterest in putting pressure on their employers or the labor market in directly challenging their exploitative working conditions, or the racism they experience. In this way, the bounded labor of seafaring regimes highlights multiple ways in which capitalist incorporation and mobility, aided by the circulation of commercial goods across the earth, often depend on exclusion, containment, and segmentation in order to be successful.

In a climate where seafarers are acutely aware that they can be passed over for lower-waged labor at any time, it is important to understand how labor market segmentation intersects with various social, cultural, and masculinist conceptions of identity. Life at sea has always presented numerous difficulties to seafarers, which has in turn often made it attractive - or necessary - for workers who have few other options to pursue success through the very characteristics that the supply chain defines their usefulness through. With the promise to remain bound to the sea for three to six months, comes homesickness, entrapment, and loneliness - job hazards that are 'freely' taken on by seafarers, but are simultaneously rationalized through performances of masculine hardiness, suffering, and heroism that narrate their superexploitation as promise. Analytically, then, this chapter has also sought to show that an analysis of superexploitation must also incorporate an understanding of the various cultural processes that support and reproduce logics of economic mobility and containment. As Melissa Wright (2006) has argued, by approaching the materialization of identity-based differences within capitalist circuits, "we can see how economic and cultural processes work through each other continually such that cultural entities (including embodied identities) are not epiphenomenal to capitalism but, rather, constitute the discursive stuff of its materialist core" (49).

Yet, at the close of this chapter, let me suggest that all possibilities for labor solidarities are not lost by virtue of the segmentation of the global logistics economy. Despite the extraordinary barriers the global shipping industry has put up to dissipate democratic energy and the possibilities for a shared sense of work, this does not mean that unexpected intimacies are not also possible in the chronotopic space of the ship.

While the supply chain's reliance on diverse identities often means that workers become complicit in their own subjectivation and exploitation, it is especially crucial to note that seafaring labor is unique in the way it forces workers from multiple cultural backgrounds and nationalities to be contained within the same space for months on end. Even if the resulting homesickness and loneliness is unevenly distributed - the Europeans able to return home more quickly - the boundedness of seafaring labor brings very different groups into strange intimacies and affinities.

I have watched Artemio and the Captain plot a navigational path with their compass and pen, exchanging tools and charting angles in a balletic dance across the map. When the Chief Engineer - not a particularly talented singer - picks a song far above his vocal range, the chef and steward have both jumped in, singing in unison, sometimes even reaching their arms around each other. The Ukrainian second engineer and the second mate Artemio often enjoy a round of table tennis in the evening, yelling in friendly competition as the ball flies out of the gymnasium. The containment of these workers, suspended across the ocean and variously longing for their respective homes, no doubt produces intense feelings of homesickness and confinement, but so too does it provoke relationships and interactions that exceed the work relationship and thus the disciplinary apparatus of the companies they serve. Diversity may be a structuring condition of the globalized logistics landscape, and may be utilized by ship-owners as a tool for exploitation, but it also is the source of contingent articulations and creative possibilities. Rather than think of diversity as a problem inherent to supply chains that needs to be 'solved' or managed, then, I argue that we should remain attentive to the

ways in which diversity troubles, unsettles, and disrupts – although, as this chapter has shown, diversity also often aids – the smoothness with which logistics aspires to operate.

In a few days, six members of the crew will end their contracts in Hong Kong and return home. The accommodations are abuzz with anticipation, suitcases are packed, and the seamen who will be returning home have a faraway look in their eyes, already somewhere else. Last night, the sailors threw a farewell party for their departing mates, and the karaoke songs belted in the recreation room were almost entirely of the love ballad variety: Scorpion, Michael Learns to Rock, Boyz II Men – set to background images of well-loved Filipino destinations and scenery. Montez leaned over once, in the middle of Fleetwood Mac's "Landslide". "That's what I tell my wife all the time," he said. "'I built my life around you.' Really, it's the truth. Because all of this, all this time away, is for her, and for my family. One day, I will save enough so that they can live comfortably and I don't have to be away." Such desires may appear to be a far cry away from the alluring, powerful vision of worker struggles surging along and forcefully disrupting the supply chain, but they form a different fabric of desire nevertheless – one which requires us to listen, pause, and pay attention before folding radically uneven conditions into a uniform demand for universal workers' rights.

To keep both the shipping industry and the Filipino economy stable, state officials cooperate with neoliberal capital in obscuring the narratives and experiences of divisive and confined working conditions on board ships. As a counter narrative, this chapter has sought to make visible the complex textures, intimacies and divisions of seafaring life that contest both heroic globalization narratives, as well as the centrality of the industrial worker to an analysis of capital relations. A view of the logistical economy from the

engine room or the deck of the ship reveals a world of work in which celebrations of global fluidity seem immediately naive. Instead, by looking at the proliferation of social enclosures, containments, and segmentations required in the process of capitalist incorporation, the maritime world of labor provides a way into fertile explorations of the barriers as well as possibilities of bringing diverse, multinational intimacies of labor together along the supply chain.

Conclusion

This dissertation has sought to examine the social and political economic impacts of the concomitant rise of logistical management and shipping containerization as twin operations intensifying the global circulation of commercial capital. Since the 1960s, businesses have increasingly experimented with just-in-time logistical techniques to speed the realization of surplus value, leading to the rise of global transoceanic networks of distribution that reorganize commercial circulation across distinct yet densely interconnected political geographies.

As logistical management systems have sought to regularize, standardize, and create flexible networks for circulating goods across vast distances around the world, they have become crucial to the expanded reproduction of capital. Accordingly, states have also adopted logistics-oriented growth strategies, investing in organizing and securing a spatial order that facilitates the smooth flow of trade, often in ways that inhibit the social and spatial mobility of vulnerable populations that live and work along the seams of global supply chains. As I have sought to show, containerization and logistics have worked together in ways that have allowed for both integration and differentiation in the world economy: it is disproportionately poor and racialized populations that feel the impacts of these changes most acutely across the globe, while political and business elites consolidate and reorganize institutional and productive power through logistical circuits. A critical analysis of the impacts of logistics' rise is thus necessary if we are to better understand the contemporary landscape of capitalist accumulation, within which logistical technologies have become key conduits of exploitation, containment, and governance.

Two processes, developing alongside each other, were consequential to these developments. First, logistical modes of management developed into a crucial organizing framework for the circulation of commercial capital in the 1960s and 70s; Second, as the shipping container became adopted globally as a standardized transportation unit, it proceeded to consolidate previously time-consuming and inefficient methods of transportation into a calculable and predictable system of compartmentalized flow. Together, these processes have prompted a political economic shift toward promoting the acceleration and intensification of commercial circulation as a central organizing principle of the global economy. In situating the rise of logistics as a strategy for the expanded reproduction of capital, I have sought to demonstrate that logistics is not simply a banal and depoliticized act of organization and coordination. Rather, as both a calculative logic and a material practice, logistics operationalizes a market rationality that organizes governance in a way that favors the flows of capitals over the mobility of people, making human rights of passage secondary to the mobility of capital. In a logistical approach to circulation, it is the security and mobility of supply chains rather than those who live and work in and around them that takes center stage as a matter of concern.

Approaching this argument through four 'cuts' into the world of logistical circulation – the managerial and material practice of logistics, the securitization of goods movement, the expansion of infrastructure, and the labor process – I have sought to problematize the commonplace assumption that mobility and containment are largely oppositional forces, the former straining to break free of the latter as states and corporations seek the expansion and acceleration of global supply chains. Rather, through

different angles, these chapters have sought to show how containment operates to facilitate and expand, rather than slow down or hamper the functioning of global commercial circulation. My overarching claim is that logistical practices and rationalities exacerbate growing and often contradictory tensions between the mobility of capital and the fixity of infrastructures of circulation. As states and corporations seek to facilitate the optimal conditions for smooth circulation, they also re-organize socio-spatial relations to produce a world safe for the movement of capital, prioritizing the security of the supply chain over the security of people. Rather than understand containment as a static process of sequestration or enclosure that impedes the ability for capital and people to circulate, processes of containment have gained fundamentally productive functions that intensify and facilitate, rather than prevent or deter the long-distance expansion of capitalist networks.

This argument, I have insisted, requires that we take seriously the lived experiences and material realities of the ordinary people who bear the brunt of these political economic shifts. As containerization and its associated logistical infrastructures produce new relationships between the material environments through which commerce flows and the people who inhabit or work in them, they entrench circulatory systems that allow movement, exchange, and (unequal) accumulation for some, while enforcing isolation, risk, dispossession and confinement on others. Logistics and containerization are, in this way, not processes that simply seek to create a constantly fluid system of mobility, but rather reorient mobility to productive strategies of partitioning, sequestration, and enclosure, producing a global supply chain system structured by circulatory regimes of containment.

Three broad implications arise:

First, if strategies of containment do not actually detract from capital's mobility but aid the circulation of capital, it is important for scholars of the global economy seek to unpack the relationship between flows of capital and the modes of confinement that they entail and intensify. In the context of a logistical economy, the intensification of border security and surveillance practices, coupled with the containment of vulnerable populations, are practices of governance and exploitation not antithetical to or counterproductive for the free movement of capital, but actually premised on the same political-economic imaginary as the fostering of open border flows. One of the implications of this alignment of capital mobility with security and governance is that economic wellbeing and sovereign power become intertwined with projects of global mobility, such that a core attribute of state power today is not just the ability to guard from threats to protect the populace, as traditional notions of state governance suggest, but also the ability of the nation to sustain a circulating economy *as* a way to protect and serve national interests.

Second and relatedly, the upshot of treating aggregate economic wellbeing as a proxy *for* the wellbeing of the population is that political and business elites often work together to promote investments in logistical infrastructure and circuits as being in the interest of an undifferentiated national public. In Chapter 3, for example, I showed how funding and political support for the Alameda Corridor was attained through a series of appeals to the corridor's role in ensuring the health of the national economy, a strategy which coordinated local, regional, and national interests in efforts to facilitate the production of logistics space. However, the appeal to an undifferentiated public must be

critically interrogated, since these forms of infrastructural expansion have disproportionately adverse impacts on segments of the very public they claim to serve. These impacts are felt in environmental pollution, the dispossession of livelihoods, encroaching security practices that sort racialized and poor communities into "high risk" populations, and the inequitable distribution of the benefits of logistical economies globally.

I have sought to make an argument about the unevenly distributed effects of logistics particularly because logistical zones often escape the immediate attention of the relatively privileged: because of their sequestration in spatial zones such as ports, distribution warehouses, and ships, infrastructures of circulation are easily missed by those do not to live in their direct paths. The relative 'invisibility' of these spaces to many segments of the public means that our attention is often diverted from their integral functioning to the global economy, as well as from their violent effects. Just as Marx sought to go into the "hidden abode of production" of the factory to see how capital is produced, it is imperative that in a world increasingly dependent on seamless circulation, critical scholars of international relations seek to go into other hidden abodes crucial to capital's functioning and that have not been a common focus of research on global order. Such a research agenda would seek to pay attention to forms of concealment and containment that obscure how structures of domination are being increasingly exerted through networked, logistical forms.

Third and finally, while logistical economies have facilitated new strategies of accumulation, their dependence on speed-up and just-in-time networks has also produced a system of circulation that is vulnerable to disruption. Despite it gargantuan global

architecture and powerful spatial reach, logistics is often undermined by its contingencies and irrational rationalities: from overcapacity crises and infrastructural overreach to deliberate disruptions and worker strikes and slowdowns, logistical circuits frequently experience interruptions to their flow. It is in efforts to protect the supply chain from fragility that states and corporations have engaged in experiments to secure commercial flows from interruption. A gap thus emerges between the corporate imagination of logistics as a successfully seamless system and the implementation of these practices onto often-messy realities on the ground. In this sense, paying attention to the ways in which logistical projects the persistence of disruption illustrates a social and material world in which flow and motion are never givens, but instead always problems to be solved, and products that must be produced and moved through processes replete with tension, frictions, and breakage.

It is to this question of logistics' fragility that I wish to now turn as a way to think about practical political projects that may emerge from this dissertation's research. If, as I have argued, logistics employs concealment and containment as mechanisms of control over the circulation of global capital, two seemingly contradictory yet united strategies characterize supply chains. On one hand, modes of containment work within supply chains to exacerbate unevenness and inequality, separating those who conduct the dangerous, isolated, and confined work of circulation from those who benefit from it, in both social and spatial terms. On the other hand, unifying production and distribution processes across an integrated intermodal system entails that spatially disconnected sectors of labor are being drawn together at previously unseen scale, potentially suturing Foxconn factory workers who produce iPhones to the seafarers who ship them, and to the

UPS truck drivers to deliver them to our homes.

Even if the rise of logistics has led to circulatory regimes of containment that configure the internment of particular things and people in relation to their role in the expanded reproduction of capital, it has not been entirely successful in fragmenting acts of resistance to capital flows, which seem to be building in recent years in the form of blockades, occupations, and disruptions at strategic sites of circulation. In recent years, the blockade has re-emerged as a crucial tool for anti-capitalist and anti-racist resistance around the world, from the shutdown of ports and the blockade of highways in solidarity with Black Lives Matter, to Block the Boat's blockade of Israeli Zim ships at four major US ports during Operation Protective Edge in 2014, to large-scale Chinese, Spanish, Chilean, and Greek dockworker strikes, to the Standing Rock Lakota / Dakota peoples' assertion of sovereignty over their lands in resistance to the Dakota Access Pipeline.[58] On June 5, 2018, as I am in the midst of writing this conclusion, 260,000 unionized Teamster workers at United Parcel Service have voted to authorize the biggest US strike since 1997 (Ziobro 2018), with solidarity as the main sticking point as UPS seeks to create a two-tier workplace that splits workers into established employees who get full protections and younger employees hired on lower wages. These movements have different demands, but they have often utilized a shared tactic: the interruption of commodity flows in places that form chokeholds to the circulation of capital.

At the same time that logistical circuits may be increasingly growing in power

[58] For arguments that understand the rise of blockades and occupations to be insurrectionary responses to capitalist circuits, see: Clover 2016; Ciuppini, Frapporti and Pirone 2015; Bernes 2013; Toscano 2014; Chua 2014; Degenerate Communism 2014; Bay of Rage 2011, The Invisible Committee 2009.

and scale, these varied efforts to disrupt circulation for different political ends suggest that popular movements are regarding logistical nodes and gateways as critical sites for building resistance against the domination of state and capitalist power.

Some questions, then: If capital increasingly relies on logistical precision as a source for the reproduction of surplus value, and if this reliance has in turn created identifiable points of vulnerability, how can scholars of political economy understand and even facilitate the political aims of popular movements seeking to exploit these seams in the service of anti-racist and anti-capitalist projects? What are the political possibilities that these movements throw up in interrupting concentrations of commodity capital at their sites of flow or coagulation? How, in other words, have communities and workplaces that have been exploited, contained, or otherwise dominated by a logistical world found ways to recapture capital's chokepoints and shape them toward other possible futures?

This conclusion can only manage to pose these questions speculatively, at least for now. Yet, it is worth asking whether the strategies of containment that logistics has sought to produce allow us to imagine, in turn, strategies to contest capitalist domination. These movements indicate the possibilities of a "counter-logistics" (Bernes 2013) that works to reconfigure, repurpose, or build a supply chain more responsive to collective need than to the accumulative imperatives of capital. As this dissertation has sought to show, logistical technologies and practices work to shape the social relations of capital in ways that increase the domination of capital and the state over vulnerable populations. But in doing so, they also potentially suture disparate components of the supply chain together through the intermodal containerization of goods, offering new possibilities for

tactics of resistance and disruption along the supply chain. These disruptions suggest that while the global extension of the supply chain may have worsened working conditions for segments of labor and exacerbated the vulnerability of certain communities, it has also provided a material site and a social form connecting previously disparate populations along an integrated but volatile global logistical circuit. As the stretching of supply chains around the world make them highly vulnerable to interruption, they also offer potentially ripe possibilities for workers to more effectively contest their hierarchical and violent effects.

Of course, these are optimistic speculations. The solidarities and alternative futures that logistical circuits may inadvertently make possible certainly do not occur automatically; they have to be organized, and in many places, they already are. In addition, logistical circuits are also firmly sites in and through which the state intervenes as a strategic agent in the control and arrangement of the spaces of stocks and flows. Any intervention into the sphere of logistics must thus also reckon with the state and capital's efforts to undermine labor power, break up possible solidarities, and manage and govern the bodies that populate the supply chain. Yet – there is always a yet – without being naïve, the question of how to organize collectives along the supply chain remains a crucial question and project in a world in which vulnerable populations have always refused to simply accept the conditions under which they are governed, displaced, and exploited. Envisioning such a future depends both on locating and understanding how and where supply chains produce points of vulnerability, and in embracing and building solidarities with the alternative imaginaries and forms of life that stand against this fragile but formidable world of logistics capitalism.

Ultimately, my dissertation has sought to illustrate the incongruence between the imagination of logistics and its implementation; between its managerial rationality and its uneven applications on material practices of circulation. Logistical systems justify their intrusion and expansions into daily life on the basis that supply chains provide us with critical necessities when we most need them: Toilet paper that reaches us in an hour. Batteries in two days. Nothing illustrates this ruse more clearly than the increasing containment, control, and precaritization of the workers for whom such just-in-time networks are sources of immiseration rather than conspicuous consumption. In economically-privileged sections of global North, where the two-day or even one-hour delivery has come to be taken for granted, logistics plays a ubiquitous yet under-examined role in quotidian life, restructuring our social relations of production and consumption while appearing as the “magic” that sutures capitalist circuits together (Lyster 2016).

Yet, in many parts of the world, and even in the US, this magic is nowhere to be seen. One only has to look, as an example, at the recent humanitarian crisis in Puerto Rico, which is fundamentally a problem of distribution, to understand the fiction of just-in-time consumption on which logistics works. When the basic instruments of survival cannot reach people across crumbling infrastructure, impassable roads, and stalled bureaucracies, this dissertation proposes that we should work to carefully interrogate the capitalist and state violence through which systems that are supposed to provision life actually distribute inequality, containment, and "vulnerability to premature death" (Gilmore 2007). Problems of distribution are as much political as they are logistical. This dissertation has been one small effort to rethink and situate the study of international

relations and global political economy in the context of these rising challenges.

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